



User Guide and Instruction Manual

LG Network Storage

N2B1 / N2R1



Safety warning



Note	
1	Do not place any objects within 15cm of the unit. The unit reaches high temperatures creating the risk of burn injuries.
2	Only use compatible devices with the system ports, or the system and devices risk being damaged.
3	Do not use damaged disks. Product can be damaged.
4	Do not dismantle or change the structure of the system in any way. This may cause electric shock.
5	When dealing with system components, strictly abide by the instruction manual. Physical contact with the soldering on the backside of components may cause severe injury.
6	When transporting the system, first turn off the system and disconnect the unit from the power source. Sudden tension in cables can cause severe damage to the system. Loose cables can cause injury.
7	Take caution when handling the system so as not to corrupt the hard disk data. <ul style="list-style-type: none"> - Take caution not to bump or expose the system to extreme temperatures, as it may damage the sensitive hard disk. - Take caution when turning on the electricity, as during this time any external bumps to the system may corrupt the hard disk data. - The manufacturer disclaims all responsibility for loss of hard disk data.

8	<p>Related to damage to the HDD and data:</p> <ul style="list-style-type: none"> - during installation or disconnection of the system, ensure that the system does not experience any external physical shocks. - During the operation of the HDD, short surges and stoppages of power may cause the system to turn off and on quickly. - there may be a sudden stoppage of electricity during operation - avoid moving the system during operation of the HDD, which may cause external physical shock - during the configuration of new volumes. <ul style="list-style-type: none"> i) if during use, existing volumes are deleted and new volumes are created, data will be lost. ii) Before configuration of new volumes, each user must back up data, as well as when creating new volumes, to ensure the possibility of restoration. - e.g. virus infections. <p>※ Always back up hard disk data to avoid accidental data loss.</p>
9	<p>In the event of the administrator forgetting the password, restoration is impossible. Hence safeguard the password.</p> <p>※ To create a new password, the system must be re-initialized. In this case, all data will be lost, and data recovery will be impossible, for security reasons. The manufacturer disclaims all responsibility in the event of this occurrence.</p>
10	<p>In the event of the cover being removed during operation, the user risks electric shock, injury, and damage to the system.</p>



Warning

1	Do not use damaged electrical cords. This may cause electric shock, and is a fire hazard.
2	Use a grounded cord and grounded socket to avoid electric shock and damage to components.
3	Do not handle the electrical cord with wet hands, as this may cause shock and injury.
4	When removing the plug from the socket, ensure that the plug is handled and not the cord. Otherwise this may cause damage to the plug and even fire.
5	Always check and use correct voltage to avoid electric shock, severe damage to the system, and fire.
6	Always use grounded cords and grounded sockets with correct capacity (voltage / current) to avoid the danger of damage, electric shock, and injury.
7	In the event of noise emanating from the electrical cords or sockets, to avoid fire and injury immediately disconnect, and contact the service centre.
8	Ensure that electrical cords are correctly plugged into the sockets to avoid fire.
9	Ensure that electrical cords are not damaged or do not have heavy objects placed on them. Keep electrical cords away from children and pets. Damaged cords may cause electrical shock or fire.
10	Keep the power cords and sockets clean at all times to avoid fire and electrical shock.
11	In the event of moisture entering the system, immediately disconnect the power and contact the service centre, to avoid the danger of system damage, electrical shock, and fire.
12	Do not block vents, as this will cause system damage.
13	Prior to cleaning the system, always disconnect the power, to avoid damage and electric shock.
14	In the event of lightning and thunderstorms, immediately physically disconnect the system from any power source, to avoid damage to the system.

15	In the event of dropping the system, contact the service centre for advice and possible service. Not doing this creates the risk of damage, fire and electric shock.
16	Keep the system away from direct sunlight to avoid overheating, and melting of the case, which may eventuate in fire and injury.
17	Do not place flammable objects, candles or cigarettes on the system, as this may cause fire
18	In the event of a burning smell or smoke emanating from the system, immediately disconnect the power, and contact the service centre.
19	Keep heating devices and other electrical components at a distance from the system to avoid case melting, and hence the danger of damage, fire, and electric shock.
20	Before disassembling the system, always ensure physical disconnection of the electrical cable from the socket.
21	Do not disassemble the power supply, to avoid the danger of electric shock.
22	Keep children away from the system, as consuming any parts will cause serious injury. In the event of swallowing any parts, such as screws, immediately seek medical treatment.
23	Ensure that multipoint power sockets are not overloaded, to avoid the danger of fire and electric shock. Ensure that cords are always neatly arranged and are not trapped under the system or other heavy objects. When connecting and disconnecting the electrical cord, take care in handling the socket to avoid the danger of electric shock.
24	Ensure that there are no loose or exposed metallic objects inside the case, to avoid the danger of damage, fire and electric shock.
25	Ensure that hands are never used, to avoid damaging the system and electric shock. Always use screw drivers for work inside the system.

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1. Introduction

LG Network Storage Introduction

Thank you for purchasing the LG Network Storage.

- 1) Now the LG Network Storage basic data-save and share functions can be used in Windows, Mac and Linux operating systems.



- 2) Similarly, the internal Blu-ray / DVD rewriter can be used to efficiently save data securely for long periods.



- 3) Furthermore, the Blu-ray / DVD drive can be used when directly copying data from discs to LG Network Storage.



4) The LG Network Storage also allows for mobile synchronization, without the use of a PC, as mobile devices can be directly synchronized to the LG Network Storage.



This user manual contains express installation information as well as detailed options and functions.

Supported OS








LG Network Storage

- Windows XP, Server 2003, Vista
- Mac OS 10.x or later
- Linux (Redhat, Suse, Ubuntu)

PC S/W

PC S/W	Supported OS
NAS Detector	Windows XP, Server 2003, Vista, Mac OS 10.x or later
NAS Monitor	Windows XP, Server 2003, Vista
Comso Backup	Windows XP, Server 2003, Vista
Photo DVD Album	Windows XP, Server 2003, Vista
CyberLink	Windows XP SP2 or later, Vista
Acrobat Reader	Windows, Mac
Flash Player	Windows, Mac

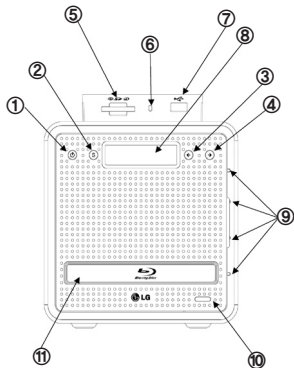
Package Contents

<ul style="list-style-type: none"> • LG Network Storage 	<ul style="list-style-type: none"> • Product warranty
	
<ul style="list-style-type: none"> • 'LG Network Storage PC Software Installer' 	<ul style="list-style-type: none"> • Quick install guide
	
<ul style="list-style-type: none"> • Power cord and adaptor 	<ul style="list-style-type: none"> • LAN cable
	
<ul style="list-style-type: none"> • Hard disk fastening screw (x8) – enclosure only 	
	

* Photographs of images from the manual may differ depending on model components.

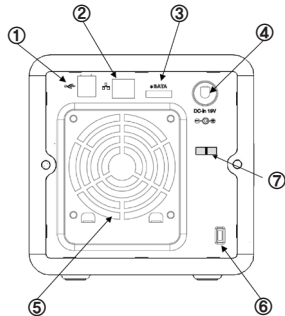
Name of Each Part

<Front>



- ① **Power button:** power on, off (to turn off power, hold button in for 3 seconds without release).
- ② **SET (S) button:** selects mode. Pressing the SET button at waiting mode allows a quick view of the IP information. Button is used to change number setting during IP set-up
- ③ **Left arrow button (<-):** navigates menu, moves cursor for IP settings
- ④ **Right arrow button (->):** navigates menu, moves cursor for IP settings
Mode button: changes mode
- ⑤ **Memory card reader:** supports SD, MMC, MS and XD
- ⑥ **Memory card Current state display LED:** - Blue : running correctly
- ⑦ **USB port:** USB 2.0 interface
- ⑧ **LCD window:** displays current state
- ⑨ **HDD/ODD state display LED:**
- Blue : running correctly
- Red : abnormal state
- ⑩ **Disk Open button:** opens/closes optical disc drive tray
- ⑪ **Blu-ray/DVD Drive**

<Back>



- ① **USB port:** USB 2.0 interface
- ② **LAN port:** LAN cable connection.
- ③ **e-SATA:** External SATA II device support
- ④ **DC jack:** Power adaptor connection
- ⑤ **Fan**
- ⑥ **Kensington lock:** Antitheft lock
- ⑦ **Adaptor cable holder:** Prevents the adaptor cable from unplugging.

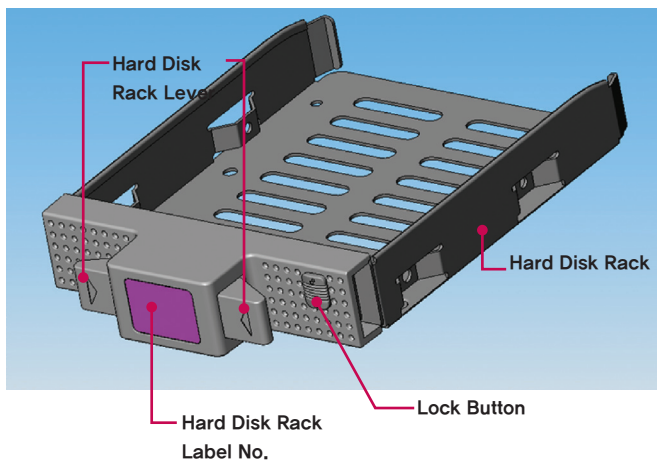
2. LG Network Storage Installation

Follow these instructions to install the LG Network Storage. If the LG Network Storage is internal, go to <**Hard disk installation and setup**>, otherwise go to <**LG Network Storage connection**>

Hard disk installation and setup

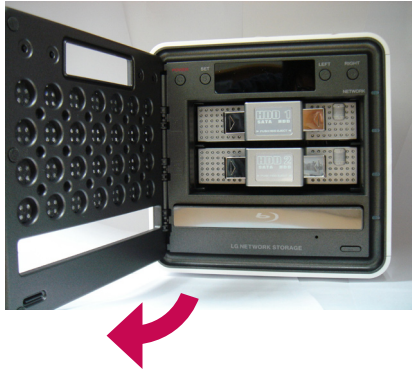
The LG Network Storage hard disk rack is shown below. Refer to each part while installing the HDDs.

Components of Hard Disk Rack

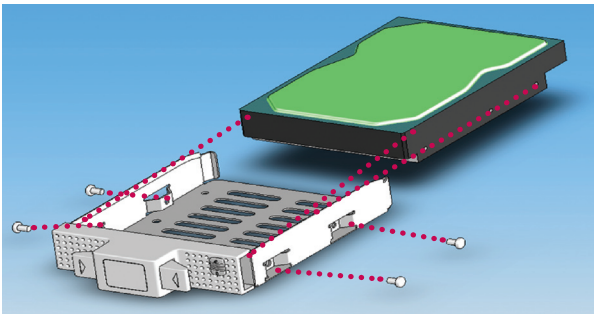


Note) If the disk sizes differ, the RAID configuration will use the smallest disk as a reference to measure all disk sizes, therefore the remainder can not be utilized and durability decreases.

- ① First, ensure that the power is off.
- ② Open the front cover of the LG Network Storage main system.



- ③ Unlock the hard disk rack by pushing the lock button upward.
- ④ Hold down the hard disk rack lever and pull the hard disk rack to separate it from the main system.
- ⑤ Insert the hard disk into the hard disk rack, and with a screw driver, screw the four screws into place.



* If the Hard disk has been in use, all the data on it will be lost.

- ⑥ Match the hard disk rack label number and the LG Network Storage front panel number, to insert the hard disk rack into the slot.



- ⑦ Push the hard disk rack into the LG Network Storage main system until it makes a click.



- ⑧ To prevent accidental detachment of the hard disk rack, push down the lock button.



- ⑨ Similarly repeat the installation procedure for all the hard disks, one by one.

‘LG Network Storage Installer’ installation (LG Network Storage system file installation, volume and RAID configuration)

- ① Connect the enclosed power adaptor to the DC jack. Plug the “power cord” into an electrical outlet.



Once the power adaptor is connected to the DC jack, connect the power cord to the outlet.

- ② While holding down both ‘<-’ and ‘->’ buttons, press the POWER button once. Once the “Enclosure_Mode” message pops up, let go of the arrow buttons.



9

- ③ Once “Enclosure mode” is complete, the LG Network Storage will automatically reboot itself. In the case that the power shut down abnormally before the system successfully reached “Enclosure mode,” please return to step 2 and re-run “Enclosure mode.”

- ④ System loads system files as it reboots. LG Network Storage shall not be accessed during the system reboot process.



- ⑤ After approximately 60 seconds, system reboot is completed with a light alarm sound. (In the case that network connection has been activated)



- ⑥ All basic installation required for running the LG Network Storage has been completed.

In order to configure the volume required for storage of the LG Network Storage user data, please refer to Chapter 4 and use the web.

- * At RAID configuration, the hard drive number and size will determine the RAID configuration time.

Total HDD Capacity	System File Installation	Volume and RAID [Individual disks]	Volume and RAID [RAID 1]
500GB (250 GB * 2)	Approx. 10 minutes	Approx. 5 minutes	Approx. 1 hour
1TB (500 GB * 2)	Approx. 10 minutes	Approx. 10 minutes	Approx. 1-2 hour
2TB (1 TB * 2)	Approx. 10 minutes	Approx. 20 minutes	Approx. 4-5 hour



Note: It is recommended not to use the LG Network Storage while RAID configuration, as this will cause retardation.

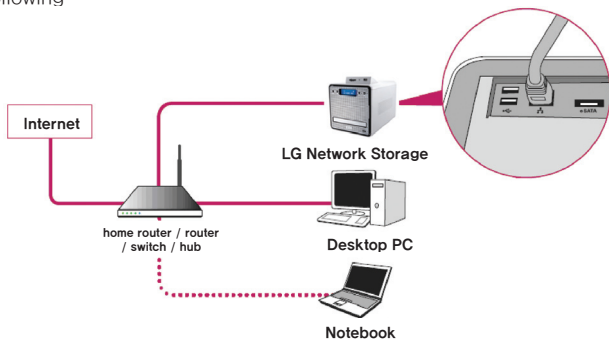
- * If the Hard disk has been in use, all the data on it will be lost.

LG Network Storage Connection

In an environment with a DHCP server, selecting automatic IP search after connecting the LG Network Storage to the IP router/switch/hub will acquire the network information from the DHCP server. For a particular IP address allocated from the Network IP administrator, installation using an IP address, subnet mask, default gateway and allocated DNS information is simple.

- ① Using the included LAN cables, connect LAN ports on LG Network Storage and network devices(home router/router/switch/hub) to each other or directly plug them into the LAN port on the PC.

- A. If the network component (home router/router/switch/hub) is used to connect the LG Network Storage (home router/router/switch/hub) to the PC, use the following**



- B. If the LG Network Storage is connected directly to the PC without another network device,**
it must be connected directly to the PC using a LAN cable, the LG Network Storage IP must be set to DHCP, the PC's IP set to automatic setting and the network will be automatically set up after approximately 2 minutes



* If the LG Network Storage is directly connected to the PC through a LAN cable, the PC's local internet will not be accessed. In this case, PC Internet may be disconnected.

- ② After checking that the LG Network Storage power cable has been connected, press the power button in the front to activate the LG Network Storage.

'LG Network Storage PC S/W Installer' installation (PC Application program installation and usage)

The "LG Network Storage PC Software Installer" CD enclosed with the LG Network Storage product purchased includes the following programs:

1. NAS Detector
The "NAS Detector" quickly and easily detects the LG Network Storage on the user's network.
2. NAS Monitor
The "NAS Monitor" allows real-time access to the status of LG Network Storage and scheduled back-up programs
3. Comnso Backup
The "Comnso Backup" program allows real-time or scheduled back-ups of important data from the client's PCs to the LG Network Storage. Files backed up may be recovered any time for use as necessary.
4. CyberLink
CyberLink helps utilizing the ODD of the LG Network Storage.
5. Photo DVD Album
The Photo DVD Album program is a search program of all media files stored within the user's PC or the LG Network Storage. It also provides functions to burn media or play movies


Available programs for installation may vary depending on user's OS environment

Program	Supported Operating System		
	Windows	Mac	Linux
Acrobat Reader	O	O	-
Flash Player	O	O	-
NAS Detector	O	O	-
NAS Monitor	O	-	-
Comnso Backup	O	-	-
CyberLink	O	-	-
Photo DVD Album	O	-	-

PC application program installation

- ① Insert the "LG Network Storage PC Software Installer" CD in the PC's optical drive (CD/DVD/BD drives). After a short while, the following menu will appear.
 - * Installation on PCs without a fiber optic drive may be processed using the iSCSI function of LG Network Storage. Please refer to 4 Service - iSCSI.



- ② Flash Player Installation is required to fully utilize the LG Network Storage web menu. If the user's PC doesn't not already have the Flash Player installed, proceed with installation by clicking on the icon .
- ③ Click the "NAS Detector" button and install "NAS Detector" on the user's PC. After installation the shortcut icon will appear.



- ④ To install the "Comnso Backup" program, click on the "Comnso Backup" button.
- ⑤ To see the LG Network Storage User Manual, click on the "User Manual" button.

PC Application Program Usage

This explains how to use "NAS Detector"

For a detailed explanation for the bundle program, please refer to the built-in manual after installing the program. (Comso back-up/Photo DVD Album/CyberLink group)

<"NAS Detector" usage>

- ① After checking that the PC network is intact, double click the "NAS Detector" icon on the desk top to open the program.

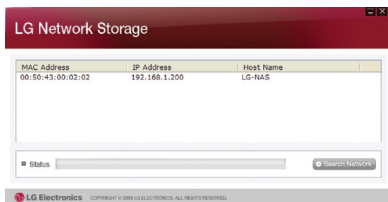


- ② The 'NAS Detector' will automatically search the LG Network Storage connected to the user's PC.

When the searching is completed, the LG Network Storage IP Address, MAC Address, and Host Name information are displayed on the screen.

The factory default settings are shown below.

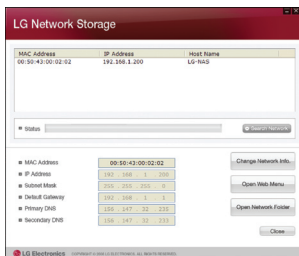
- MAC Address: serial number for each LG Network Storage product is printed in the back label.
- Host Name : LG-NAS





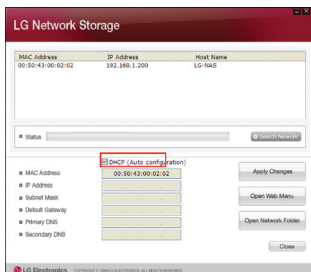
- * If the desired LG Network Storage is not found, click again on the 'Search Network' button to restart the search. If the search on the 'NAS Detector' is unsuccessful, re-check the Network connection. For manual setup see section **<IP Setup>**.

- ③ If the search result of the LG Network Storage information is chosen, as well as default network information of the LG Network Storage, including the Subnet mask, Default Gateway and DNS, 'Change Network Info', 'Open Web Menu' and 'Open Network Folder' buttons will appear.



- * For the 'NAS Detector' to properly function, the PC needs to be connected to the same home router/router / switch / hub as the LG Network Storage.

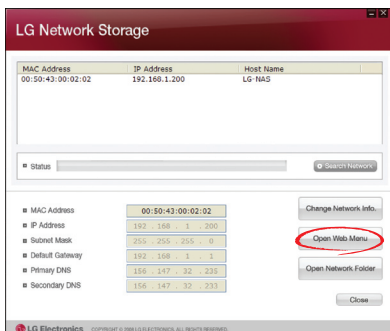
- ④ 'Change Network Info' can be selected to change the IP address.



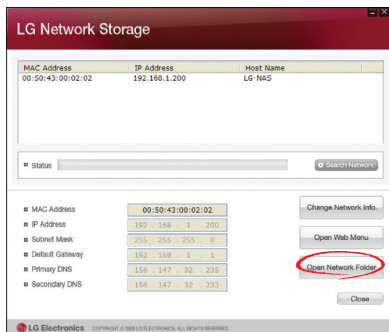
The DHCP selection option appears if a router is used or if there is a DHCP server on the network.

* If no IP address is allocated, use the IP address "NAS Detector" or check the DHCP option and automatically assign an IP address

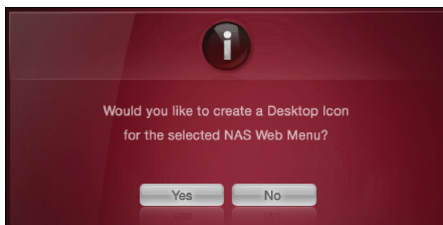
- ⑤ If the 'Open Web Menu' button is clicked, the web menu of the selected LG Network Storage can be accessed.



- ⑥ If the 'Open Network Folder' button is clicked, the LG Network Storage network folder can be accessed.



- ⑦ In selecting "Open Web Menu" or "Open Network Folder", a pop up message appears with "Yes", which when selected will produce a shortcut icon on the desktop, and after which the LG Network Storage web menu and network folder can be easily accessed.



NAS web menu shortcut



NAS network folder shortcut

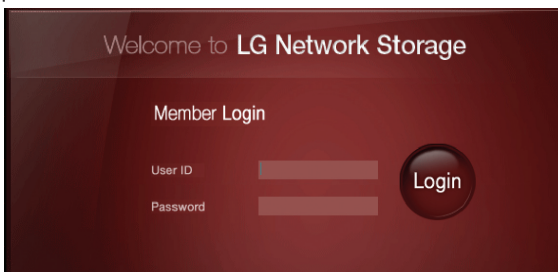
< Using the LG Network Storage web menu >

The web menu offers LG Network Storage management features such as Network Information, Share management, and Service management. It also offers menus to setup data storing using Blu-ray/DVD drives and synchronized storage of mobile devices.

- ① Double click on the LG Network Storage web menu shortcut button.



- ② The LG Network Storage web menu can be used, after inputting user ID and password. The LG Network Storage default ID and password are 'admin' and 'admin'.
* A system idle for 40 minutes after log-in will automatically log off for security purposes.



- ③ After logging in, use the LG Network Storage data set-up, share management, service management, Blu-ray/DVD drive, and mobile sync. features. The detailed information can be found in **<Chapter 4 Using LG Network Storage Web menu>**.

Item	Value
NAS Name	LG-NAS
NAS Description	LG-NAS server
Firmware Version	8.5.9.1836
Current Date and Time	2009-08-20 13:11:28
Time Zone	Asia/Seoul
NAS Type	[VOLUME1 VOLUME2]
OSD	Disable
IPSC	Disable
DLNA	Disable
e-Mail	Disable
Fan Status	RPM_SILENT 1248 RPM

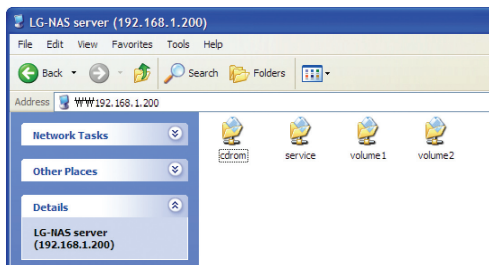
<Using LG Network Storage Network Folder>

File share and store can be performed, similar to the internal or external HDDs connected to the PC.

- ① Double click the LG Network Storage network folder shortcut.



- ② The LG Network Storage Blu-ray/DVD drive under folder name "cdrom" and "service" / "volume" will appear.



- ③ To view the contents of the disc inserted in the LG Network Storage, double-click on the 'cdrom' folder, and to access the LG Network Storage hard disc, double-click on either folder 'volume1' or 'volume2'.

* If the contents of the LG Network Storage 'cdrom' folder are not displayed correctly, please push the refresh button.

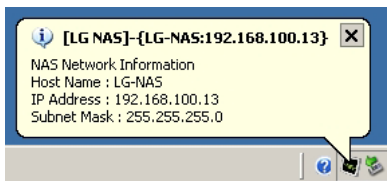
* The default ID and password for the LG Network Storage are 'admin' and 'admin'.

* Folders 'volume' / 'service' will only appear after the user has completely configured the volume through the web menu.

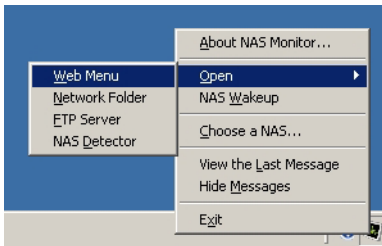
<Using the NAS Monitor>

The NAS Monitor offers various functions for the user to easily utilize the LG Network Storage. For example, user can access the network folder or web pages by simply clicking the MAS Monitor menu.

The NAS Monitor basically obtains an IP address through automatic connection with LG Network Storage. This allows the user to easily access the network folder or the web even after a change of IP address without changing the settings.



The NAS Monitor icon will show up as Windows' tray icon when the program running, on the right bottom side of the desktop. The below screenshot captures the menu shown when the user hits the right-click of the mouse.



<Web Menu>

Web menu is used to access the web page.

<Network Folder>

Network folder is used to open the network folder. Double-clicking the left button of the mouse will open the network folder.

<FTP server>

This is used to log on to the FTP server.

<NAS detector>

The NAS Detector program is run to change the IP address of the LG Network Storage. This menu will properly function only after the NAS Detector has been completely installed.

<NAS Wakeup>

This function is used to change the LG Network Storage mode from maximum energy save mode to normal mode. This procedure usually takes approximately 1 minute.

<Choose a NAS>

Using one LG Network Storage will automatically set up an IP address for the NAS monitor. However, using multiple LG Network Storages may forward too many messages to the NAS Monitor while not knowing to which LG Network Storage the message is being sent at the selection of a menu. Therefore, designating one LG Network Storage may allow information for that specific LG Network Storage to be processed.

<View the Last Message>

This menu shows the last message sent.

<Hide Message>

This menu hides the message sent from LG Network Storage.

3. LCD panel and front button usage

Once the booting is complete, the default LG Network Storage screen will be as follows.



* If the LAN cable is unplugged, the network icon (🌐) will not appear on the LCD window. If the network connection is unstable or in the middle of acquiring the IP address, the network icon (🌐) may blink.

Power Off / On (POWER button)

Power On

After pushing the POWER button on the front panel, the following message appears, activating the LG Network Storage.



Power Off

Pressing the POWER button for longer than 3 seconds will shut down the system after showing the below message.



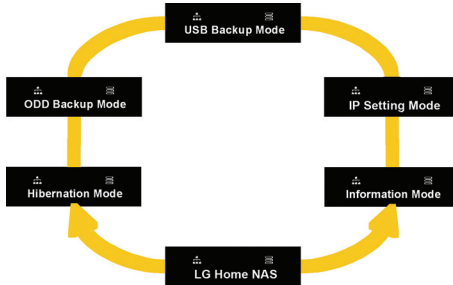
Icon Description



- ① Icon shows the status of the network connection. It is deactivated if the LAN cable is disconnected and blinking if connected. The icon will also blink if the IP address has been set up to be acquired automatically (DHCP) or in the process of acquiring IP address.
- ② Icon is activated when user has logged on to LG Network Storage by opening the network folder.
- ③ Icon is activated when the memory card/USB/e-SATA devices are connected.
- ④ Icon is activated when CD/DVD/BD media are inserted to the BD/DVD drive.
- ⑤ Icon is activated when volume is configured to save the user's data. If this icon is not yet activated, user may not send any file to LG Network Storage even by opening the network folder and may not be able to use the USB back-up or the ODD back-up functions.

Action set-up ('←', '→' buttons)

Pressing the '←', '→' buttons in the front will allow access to various functions of LG Network Storage. Action modes activated by using the arrow keys are as follows:



Action modes comprises 6 modes of [Stand-by Screen] - [Information Mode] - [IP Setting Mode] - [USB Back-Up Mode] - [ODD Back-Up Mode] - [Hibernation Mode] in order and user may navigate through the modes by using either '←' or '→' button. For each action mode press the Set (S) button in the relevant mode.

Information Mode

Information Mode shows the current status and information of LG Network Storage. Once in the [Information Mode], user may use the arrow keys to move through [IP Address Information] - [System Firmware Version] - [HDD Usage Capacity] - [Date and Time] - [Fan RPM Information].

[IP Address Information]

Mode allows user to check the IP address set up.



* Pressing the Set key from the stand-by screen will allow a quick view of the IP address

* If IP address is set up for automatic acquisition (DHCP), IP address may temporarily appear as 000.000.000.000 in the process connecting to the DHCP server.

[System Firmware Version Information]

This shows the version of the system firmware installed.



[Micom Firmware Version Information]

This shows the version of the Micom firmware installed.



[HDD Usage Capacity]

This shows the hard disk's used-up capacity in comparison to its total capacity in percentage (%).



* If the volume is not configured in advance, 'HDD Config First' will appear.

[Date and Time Information]

This shows the current date and time set up in the LG Network Storage.



[FAN RPM Information]

This allows to check the current Fan rotation per minute of LG Network Storage.



IP SETTING MODE

The LG Network Storage IP can be set up by using the Set key and entering [IP SETTING MODE].

The arrow keys may be used to navigate through menus [Manual IP set-up] - [Automatic IP set-up] - [Return to stand-by screen], and the Set key may be used to enter any of the menus.



For Manual IP set-up, please follow the following orders:

- ① Press the Set button once [1] Static IP appears. The below message will pop up.



- ② Press the Set button again.



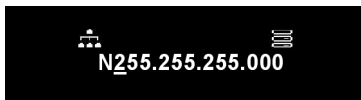
- ③ It will show the current IP address and the cursor will be placed on the first digit. Pressing the Set button will increase the number by 1. Once the intended number is reached, press the right arrow key to move onto the next digit. To return to the previous number, press the left arrow key to move the cursor to the left.



- ④ Pressing the right arrow key from the last digit will move the cursor to the next set-up value.



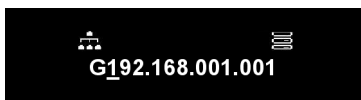
- ⑤ Press the Set key.



- ⑥ Set up the network mask value following the procedure for the IP address set-up.



- ⑦ Press the Set key.



- ⑧ Set up the gateway address following the procedure for the IP address set-up.



* LG Network Storage recommends that user manually sets up the IP address given to the IP administrator in order to prevent potential clashes with a router or any other network devices.

USB Back-up Mode

LG Network Storage provides functions to easily store data from USB, memory card, or other removable disks to the LG Network Storage with a simple click of a button.

Note: Certain memory cards may require an adaptor. (A list of memory cards compatible with LG Network Storage may be found on <http://www.lge.com>. LG Network Storage may not function properly if a memory card, not listed on the website, is to be used.

[Simple Back-up - OneTouch Back-up]

Connect the USB or the memory card to LG Network Storage. As soon as the system reads the device, the following message will pop up.



① To back-up press the Set(S) button, and to cancel press the left button (L) '←'.

※ *In the case that several types of external devices are plugged in, back-up will take place for the device plugged in last.

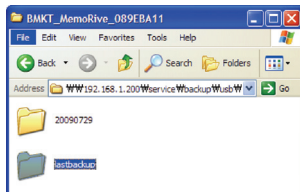
② Progress of data saved will appear in percentage (%).



③ Once back-up is completed, a folder named after the manufacturer company of the storage device will be created within the service/back-up/USB folder. This will allow to distinguish this folder from other devices in the future. Subfolders will be created by back-up date to save all contents of the USB or the memory card in LG Network Storage.

Folder names will be set up automatically as follows:

Saved in	Folder name
Service/back-up/ USB	Manufacture company name_Serial No./ File back-up format /Date folder created



- ※ In the case of simple back-ups, if one storage device is backed up several times, the data from the final back-up will be saved under the Last Backup folder. If one device is backed up more than once on one day, a serial number will follow the date. The folder created for the very first back-up will include all data from the external storage device, and subsequent back-ups will only save additional folders or files compared against the previous back-up data.

For more details on the Last Backup folder, refer to Chapter 4 - USB Synchronize Set-Up.

[USB Back-up Mode]

Using the arrow keys to move to USB Back-up Mode and pressing the Set key will activate the same way as the simple back-up.

For USB back-up, user may log on to the webpage and set up the relevant sections. For more details on the Last Backup folder, refer to Chapter 4 - USB Synchronize Set-Up.

ODD Backup Mode

Backup data on discs using LG Network Storage (ODD Backup)

LG Network Storage provides functions to back up data saved in optic disks such as CD/DVD/Blu-Ray on to LG Network Storage with a simple click of a button.

- ① Insert the optic disk to be backed up in the LG Network Storage BD/DVD drive.
- ② Once the system reads the optic disk, the optic disk type will appear in the front of the LCD.



- ③ Once the optic disk is recognized, use the arrow keys to mode to [ODD Back-up Mode] and select using the Set key.
- ④ Once in the [ODD Back-up Mode], use the arrow keys to select the 3 types of menus as shown below:



- ⑤ Select the preferred back-up method and pressing the Set key will initiate back-up.



- ⑥ Progress of data saved will appear in percentage (%).

- ⑦ Pressing ‘←’ button will cancel the job at any time.



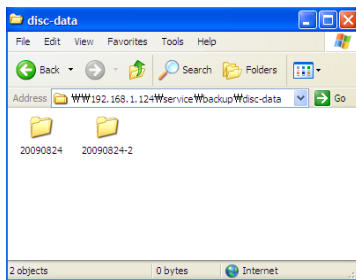
- ⑧ Once back-up is completed, the following message will pop up:



[Data Copy]

This is a function to back up the content of the disk on to LG Network Storage just as it was originally in the disk.

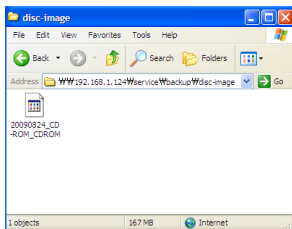
Selecting the Data Copy function will back up user's data in subfolders created by back-up date under service/back-up/disc-data folders. If Data Copy is executed more than once on one day, a serial number will follow the date.



[Image Copy]

This backs up contents in the disk in iso image file formats.

Once back-up is complete, user's data is saved in subfolders created by back-up date under service/back-up/disc-image folders. If back-up takes place more than once on one day, a serial number will follow the date.



However, Image Copy will not function properly in one of the following cases:

- ① If the optic disk is copyrighted, 'unsupported disc' message will appear on the LCD and back-up will not be processed.
- ② Disks recorded in multi-sessions will not support Image Back-ups.

Hibernation Mode



Hibernation Mode shuts down all services of NAS and minimizes the energy used in the overall system including the HDD to run NAS in maximum energy save mode. In the maximum energy save mode, all of the above icons will disappear.

Now Working...

Hibernation Done

To change from the Hibernation Mode to normal mode, press any one of the keys except the Power button. Logging on to the webpage and entering the administrator's password will also change the setting to normal mode.

In the Hibernation Mode, the majority of the services will not be accessed including SMB (Samba). Maximum energy save mode will not be available while iSCSI function is activated.

Tray open / close (DISC OPEN button)



Pressing the “DISC OPEN” button in the bottom front will open the tray on which the disc can be placed. Pressing the “DISC OPEN” button or softly pushing the tray when the tray is open will close the tray.

4. LG Network Storage Web Menu Use (for LG Network Storage administrators)

System Settings

Network

In the Network setting menu, an important set-up needs to be made to connect the LG Network Storage to the network. If the set up is not performed correctly, connection problems will arise at later stages, hence care must be taken.

The screenshot displays the LG Network Storage web interface. At the top, there is a dark red header with the text "LG Network Storage" on the left and three icons (WebDAV, Torrent, File Viewer) on the right. Below the header is a navigation bar with "Home", "Logout", and "Info" links. A sidebar menu on the left lists various system settings: System, Network, Remote access, Time, Mail notification, Volume, Selective mirror, Power, Language, Firmware, Share, Blu-ray, Service, Mobile Device, and Information. The main content area is titled "Network" and features three tabs: "Host", "Interface", and "Workgroup / Domain". The "Host" tab is active, showing "Host Name Setting" with two input fields: "Host Name" (containing "LG-NAS") and "Host Description" (containing "LG-NAS server"). "Apply" and "Cancel" buttons are located at the bottom right of the settings area.

Host

- ① Designate an LG Network Storage host name.

The server name has a limit of 12 characters, this can be a combination of letters, digits, underscores and hyphens; the first characters though must be a letter or a number.

Names permitted: LG-NAS, LGNAS-123

Names not permitted: LG_NAS, -LGNAS, 123-LG, LG-#, LG/N

Host Name Setting

Host Name	LG-NAS
Host Description	LG-NAS server

Apply Cancel

- ② Type in host description.

The host description has a limit of 24 characters; this can be a combination of letters, digits, underscores, hyphens and spaces. This explanation only affects the Windows client.

Interface

The Network interface's IP properties are specified. During system connection, care must be taken as restrictions may be created.

IP Address Properties

Manual IP Setting
 Obtain an IP Address Automatically (DHCP)

IP Address	192	168	1	200
Subnet Mask	255	255	255	0
Default Gateway Address	192	168	1	1
DNS Server Address (Primary)	156	147	32	235
DNS Server Address (Secondary)	156	147	32	233

If an IP address is provided by the network administrator or there is a specific IP address user would like to use, select 'Manual IP Set-up' and enter the IP address, subnet mask, default gateway and DNS address.

- IP address: Enter desired IP address.
- Subnet Mask: Enter the subnet mask that suits the current network environment.
- Default Gateway: Define the outgoing route. If no gateway exists on the network, enter the IP address.
- Default DNS server address: The DNS handles conversions between domain names and IP addresses. If the DNS is not correctly configured, e-mails, DDNSs or domains will not function normally.
- Secondary DNS server address: Enter the secondary DNS server address.



* If accurate values are unknown, please contact the internet service provider (ISP) or the network administrator.

[To acquire an IP address automatically]


In order to acquire an IP address automatically, select 'Acquire IP address automatically (DHCP)'. This option may be used if there is a DHCP server (or internet router) within the network. Once the DHCP option is activated, the connection with the web menu will be terminated and a new IP address should be confirmed through the LCD screen or the NAS Detector program. DHCP set-up will regularly renew the user's IP address from the DHCP server, causing unintended IP address changes, and require close attention.



In the case that it is set up for automatic IP address without a DHCP server within the network, a Link Local address such as 169.254.XXX.XXX will automatically be set up automatically. This can be used when the PC and network cable are directly connected and the PC's address is also set up to 'Acquire IP address automatically'.

[Ethernet Frame Size Set-up]

Configure ethernet frame size. If frame size is unknown, set it to 1500.

Ethernet Frame Size Properties

Ethernet Frame Size	1500 bytes (Default) 
---------------------	--

* Ethernet Frame Size: If the Ethernet frame size is at least 1500 gigabits, specified files can be sent quickly and with ease. In this case, the LG Network Storage alone does not change, but so do the PC and home router/router/hub/switch frame sizes. Otherwise performance will be reduced.

Workgroup/Domain

Set up a workgroup and domains that the Windows network supports. This will allow for access to the LG Network Storage shared folder in Windows. In addition to this, the LG Network Storage domain service supports a Windows Active Directory, enabling the import of existing user information, with ease and speed.

- ① Select the appropriate 'Workgroup' or 'Domain' considering the environment where the LG Network Storage will run.

Windows Network Type	
Workgroup	<input checked="" type="radio"/> Workgroup <input type="radio"/> Domain (Active Directory)
Workgroup	<input type="text" value="WORKGROUP"/>
Domain (Active Directory)	<input type="text"/>
Domain Administrator ID	<input type="text"/>
Domain Administrator Password	<input type="text"/>

- ② When selecting 'Workgroup', input workgroup name required. Or when selecting 'Domain', input domain name, domain administrator ID and password.

* Domain: In the active directory user environment, the domain settings should not be created in the local User/Group folder, but should be created in the domain User/Group folder. When the domain settings are created, the network administrator must be available to provide assistance, as the user must have access to all information concerning the Name server. If wrong information is inputted, sharing and use of the LG Network Storage will be limited. In the event of unfamiliarity with the Workgroup/Domain, use of default values is recommended.

Remote Access

DDNS (Dynamic DNS)

Using DDNS and connecting the LG Network Storage externally by domain name is possible. (Example: <http://myname.lgnas.com> or <ftp://myname.lgnas.com>).

To record and connect the server IP address to the in the case of using a fixed IP is possible, though the DDNS allows for a convenient connection in a dynamic IP environment, where IP changes in time. Variation of IP address is monitored and mapped to a domain name in real time. Therefore, there is no need to remember IP address as there will be a fixed address. (e.g. myname.lgnas.com)

DDNS	
	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
② Domain Name	<input type="text" value=""/> .lgnas.com
③ DDNS Password	<input type="text" value=""/>
Status	Service stopped

① DDNS: Select 'Enable'

② Domain name: Input domain name to be used.

③ DDNS password: Input password.

♣ Password is required in the case that domain name needs to be re-registered for reasons of system initialization, replacement of LG Network Storage among others. It is important to remember the password.

④ Click on the 'Apply' button.

♣ If 'Disable' is selected after a domain name is registered, the previously registered domain will be removed, thus the domain name cannot be registered in other LG Network Storages. Caution must be taken at set-up.

[UPnP]

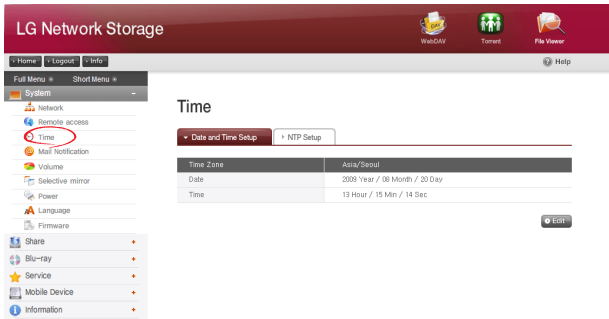
The UPnP port forwarding is used for LG Network Storage to directly receive requests from the router connected to the LG Network Storage. Access to the LG Network Storage from the outside using a DDNS usually requires a special set-up for the router to forward network requests received by the router to the LG Network Storage, and the UPnP port forwarding function allows the router to forward data without a separate router set-up. (This option is only available if the router is such that supports the UPnP port forwarding function.



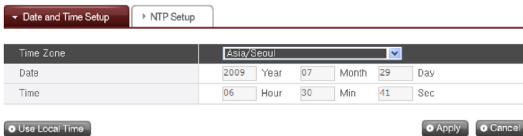
- ① Check whether the address of the router currently connected to the Network Storage is properly displayed.
 - ② If the router address is properly displayed, it should display whether the router's port forwarding function has been activated.
 - ③ Select the 'Apply' button.
- ♣ If the router does not support the UPnP port forwarding function or the function is deactivated, the UPnP port forwarding may not perform properly.

Date & Time

Set up the system time. In order for the files uploaded in the shared folder to display the accurate time and log times, the system time should be properly set up.



Date and Time Setup



- ① To manually set the date and time, click on the 'Edit' button. Use 'standard time zone' to designate the current local region for LG Network Storage. The standard time zone set-up may affect the NTP and domain user certification, so exact values must be entered.
- ② Local time will be used by clicking the 'Use Local Time' button.

NTP Set-up

The Network Time Protocol (NTP) periodically aligns itself with an external time server to obtain and synchronize itself with accurate time. This accurate time should continuously activate the NTP. To use the Default Time Server, refer to pool.ntp.org server time.

Date and Time Setup		NTP Setup	
NTP Server	<input type="radio"/> Enable	<input type="radio"/> Disable	
NTP Server Address	<input type="text" value="pool.ntp.org"/> <input checked="" type="checkbox"/> Use Default NTP Server (pool.ntp.org)		
NTP Synchronization Frequency	<input type="text" value="Once a Day"/>		
		<input type="button" value="Apply"/>	<input type="button" value="Cancel"/>

Mail Notification

To use Mail Notification, the LG Network Storage usage amount can be periodically checked. Registration information and results will be sent to users subsequent to their new registration.

The screenshot shows the LG Network Storage web interface. On the left, a navigation menu lists various system settings, with 'Mail notification' circled in red. The main content area is titled 'Mail Notification' and contains a table with two columns: 'Mail Notification' and 'Disable'. The table has several rows for configuration, including 'SMTP Server Address', 'Subject', 'Recipient Mail Address', 'Notification Trigger', and 'HDD Status Sending Time'. At the bottom right of the table, there is an 'Edit' button, which is also circled in red.

- ① To configure the mail notification, click on the 'Edit' button.

- ② To use it check 'Enable' if 'Disable' is not used. If 'Enable' is checked, proceed with the following steps:

Mail Notification	
	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
SMTP Server Address	<input type="text"/>
SMTP Authentication	<input type="checkbox"/> SMTP Server Requires Authentication
SMTP Server USER ID	<input type="text"/>
SMTP Server USER PASSWORD	<input type="text"/>
SMTP SSL Support	<input type="checkbox"/> SMTP Server Requires Secure Connection(SSL)
Subject	NAS Status Report
Recipient Mail Address	<input type="text"/>
Notification Trigger	<input type="checkbox"/> HDD Status Report
HDD Status Sending Time	Every Day

- ③ SMTP Server Address: Input the Mail Server address. Refer to the information page in the network administrator Mail Service, and input the accurate SMTP Server Address value. (e.g. smtp.mail.yahoo.com) In the case that the port number used for the mail server is not the default value, the port number should be recorded next to the server address. This would generally be the case when the SMTP SSL has been designated. (e.g. smtp.gmail.com:446)
- ④ SMTP Authentication: When sending mail, dependant on the mail server, login may be required. In the case of own mail server, the SMTP Authentication must be activated. (e.g. Smtplib.Webmail SMTP servers such as yahoo.com perform certification processes. Refer to the user webmail service help)
- ⑤ SMTP SSL Support: Some mail servers' login information is encrypted and sent. At this time the SMTP SSL Support must be activated. (e.g. Smtplib.Webmail smtp servers such as gmail.com perform certification processes. Refer to the user webmail service help)
- ⑥ Subject: The information email subject can be specified or changed.
- ⑦ Recipient Mail Address: Input the mail receipt administrator's address.
- ⑧ Notification Trigger: Set up the information concerning the periodic use of the HDD. In the case of not wanting to receive message periodically, the option may be disabled.
- ⑨ HDD Status sending time: The HDD use information mail out frequency can be determined (daily/weekly/monthly).

Volume Set-up

In order for data to be saved on to LG Network Storage, volume must be set up. If the volume is configured the hard disk icon will appear on the far right side of the LCD in the front, but if the volume is not configured, the disk icon does not appear and the network drive connection, USB back-up, ODD back-up among other functions will not be available.

This product provides the following 5 volume configuration methods for the user's requirement:

- RAID 0 (striping)
 - RAID 1 for important data (mirroring)
 - Linear (JBOD) volume
 - RAID 1 (mirroring) + JBOD volume
 - Single disks (disk 1, disk 2)
- ♣ Appendix A includes detailed instructions on volume construction and it is recommended to refer to the list of recommended hard disks by visiting the URL provided in Appendix D.
- ♣ When volume is configured, part of the hard disk is allocated to the LG Network Storage system. Consequently, after volume configuration has been completed, the size of the volume will appear smaller than the hard disk size.

Volume Configuration

To configure the volume, follow the below procedures. Configuration of the volume will remove all existing user's data in the hard disk and will not be recovered.

- ① Log on to the web and open system → volume.

The screenshot shows the 'Volume' configuration page in the LG Network Storage web interface. The page has a sidebar on the left with navigation options like 'Home', 'Network', 'Volume', 'Mobile Device', and 'Information'. The main content area is titled 'Volume' and contains two configuration blocks for 'Volume Name' and 'Volume Name2'. Both are set to 'Volume1'. The parameters for each are:

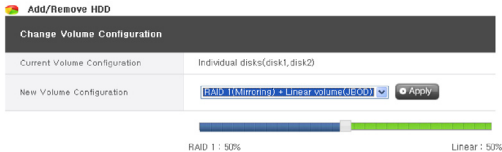
Parameter	Value
Type	No RAID
Total Size	2000
Used Size	2000
Available Size	0
Use rate(%)	100%
Trash Box	0

Below the configuration blocks, there is an 'Add/Remove HDD' section with a 'Change Volume Configuration' button and a 'New Volume Configuration' dropdown menu set to 'RAID 0(Striping)'.

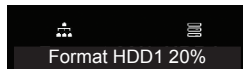
- ② On the top are the current volume array and a detailed description. If the volume has not yet been configured, there will not be any detailed description.
- ③ The “new volume configuration” menu under “change volume configuration” below comprises “RAID 1 (striping)”, “RAID 1 for important data (mirroring)”, “linear (JBOD) volume”, “RAID 1 (mirroring) + linear (JBOD) volume”, and single disks (disk 1, disk 2). Select one of the above and press the “apply” button.




- ④ RAID 1 (mirroring) + linear (JBOD) selection activates the slide bar below for size selection. Move the slide bar to determine the size and press the “apply” button.



- ⑤ To use only one disk, user must set up “single disks”.
- ⑥ In the process of volume configuration, the web menu and the buttons in the front will not be available. The configuration progress may be viewed through the LCD in the front.



- ⑦ If either “RAID 1 (mirroring)” or “RAID 1 (mirroring) + linear (JBOD)” is selected, the synchronization progress for the RAID 1 portion may be viewed on the web screen.

Volume Name	volume1
Type	raid1
Total Size	220G
Used Size	188M
Available Size	220G
Use rate[%]	1 %
Trash Box	
Resync Rate	2.2 %

Add disk

In the case that “single disks” is being used, new disks may be added by following the below procedures.

- ① Press the End button in the web, system → power → end.
- ② Insert the second disk in the LG Network Storage and turn the power on. To add new hard disks, refer to Chapter 2 LG Network Storage Installation.
- ③ In the web, log in and open system → volume
- ④ Press the “add/remove disk” button above the “change volume configuration”.



Add/Remove HDD

- ⑤ Check the second disk inserted and press the “add” button.

Select the bay to edit

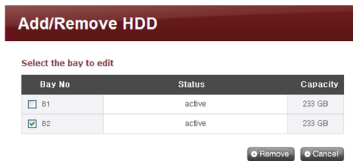
Bay No	Status	Capacity
<input type="checkbox"/> B1	active	233 GB
<input checked="" type="checkbox"/> B2	inactive	233 GB

Remove disk

Forced removal of the hard disk without following the remove disk functions provided in this screen may cause future complications with system performance and loss of user's important data. Therefore, it is strongly recommended that user uses the remove disk button on the web when removing hard disks.

In the case that "single disks" is being used, existing disks may be removed by following the below procedures.

- ① In the web, log in and open system → volume
- ② Press the "add/remove disk" button above the "change volume configuration".
- ③ Check the disk to be removed and push the "remove" button.



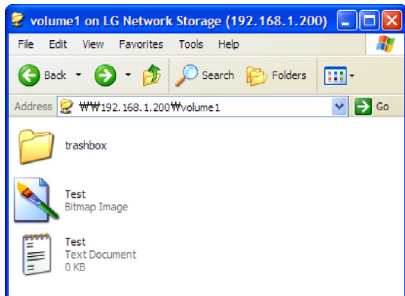
Hot Swap

This device allows the replacement of hard disks without turning off the system power. This option is only available when the volume configuration is set to RAID 1 or single disks. Using this option for other volume configuration types may cause to lose even the remaining hard disk data in the device.

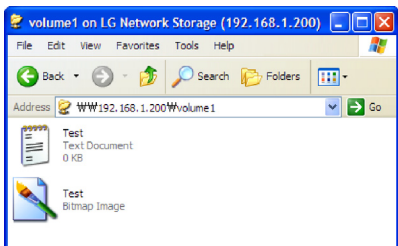
- ① Remove the disk following the procedures set out in [Remove disk].
- ② With the power turned on, insert the new hard disk in the device by referring to Chapter 2 LG Network Storage Installation.
- ③ Move to the webpage and select "add/remove HDD".
- ④ Select the hard disk currently inactive and press the "add" button.

Trahsbox

Removing a file or folder when the network drive is still connected creates a trashbox and all deleted files are temporarily moved here. If user were to recover the deleted data, user may find the file or folder from the trashbox and move them to the intended location.

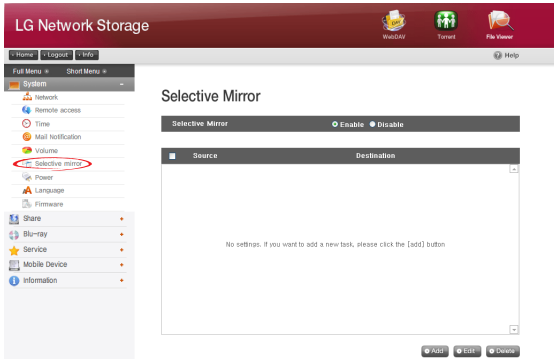


However, trashbox is created for each highest level folder and there will be as many trashboxes as the number of user's folders. In the case that user runs out of hard disk capacity and must empty all trashboxes, user may click on the "recycle bin" icon on the volume web screen and empty all contents of the trashbox. .



Selective Mirror (Selective data protection for folders)

The Selective Mirror function automatically generates copies of certain folders, which allows data recovery even after the loss of source data.



Add Selective Mirror List

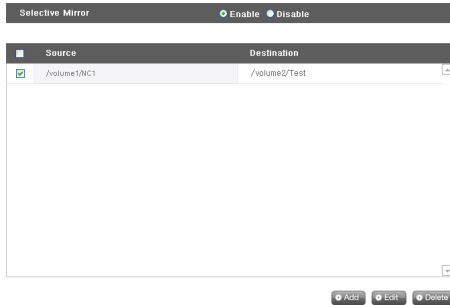
- ① Choose Selective Mirror activation.
- ② Pressing the add button will move the screen to add a new list.



- ③ Under “source path”, select the folder to be backed up and under “destination path” select the folder that will save the back-up data.
- ④ Once the save button is pushed, a new list will have been added.

Edit Selective Mirror List

- ① Checkbox the item to be edited and press the 'edit' button.



* Only one item can be edited at a time.

- ② Edit the "source path" and the "destination path" and press "OK" to confirm the edited set-up.

Delete Selective Mirror List

- ① Checkbox the item to be deleted.
 - * More than one item at a time can be deleted.
- ② Press the "delete" button to confirm the deleted set-up.

Use Selective Mirror

If SMB (Samba) and FTB is used to store data in the LG Network Storage and a change incurs in the source folder, the same change will apply to the destination folder and the source folder will be double protected.

* To maximize the effects of Selective Mirror, it is recommended to set up different volumes for the source folder and the destination folder. (for the single disks setting or the RAID 1+ linear volume setting)

Example)

source folder: volume1/source

destination folder: volume2/destination

Conditions

- ① The source folder and the destination folder cannot be the same folder.
- ② One source folder may have up to 4 destination folders.
- ③ A folder designated as a source folder cannot be designated as a destination folder in another setting.
- ④ A subfolder of a source folder cannot be designated a destination folder.
- ⑤ A folder designated as a destination folder cannot be designated as a source folder in another setting.

Power

Settings related to power for the LG Network Storage can be adjusted (Hibernation, UPS and System Shutdown).

The screenshot displays the LG Network Storage web interface. On the left, a navigation menu lists various system settings, with 'Power' highlighted by a red circle. The main content area is titled 'Power' and features several tabs: 'Standby Mode', 'UPS Power Setting', 'Hibernation On/Off', and 'Shutdown'. The 'Standby Mode' tab is active, showing a table with columns for 'Standby Mode' and 'Disable'. Under 'Standby Mode', there is a 'Wait Time' setting. Under 'Disable', there is a 'Disable' setting. A 'EGR' button is visible at the bottom right of the settings area.

Hibernation Setup

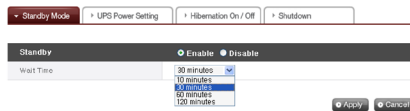
This allows all LG Network Storage hard disks to transition into stand-by to minimize energy consumption after a certain period of no data transfer. Reading or writing LG Network Storage data during the hibernation mode will gradually reactivate the LG Network Storage hard disks and fully activate after 3–15 seconds.

* It is recommended to utilize the stand-by function if user expects to leave the system unattended or NAS is not being used for an extended period of time.

- ① To set up the hibernation function, click on the 'Edit' button.



- ② Check 'Enable' to select hibernation mode, or 'Disable' to deactivate. When selecting 'Enable', proceed to the next step.



- ③ Set stand-by time.
- ④ If there is no data traffic during the given time, the LG Network Storage will enter hibernation mode. Time can be set to 10/30/60/120 minutes.
- ⑤ Click on the 'Apply' button to dictate changes to the LG Network Storage. Click on the 'Cancel' button to discard changes.

UPS Power Setting

An external UPS is effective for sudden power stoppages. When connecting an external UPS to the LG Network Storage, confirm the actions of the UPS.

- Click on the 'Edit' button to configure UPS.

Synchronize with UPS	Disable
UPS Connection Type	Disable
Shutdown Condition when Power Failure	Disable
UPS Behavior After LG-NAS has Shutdown	Disable

Edit

- Check 'Enable' to activate UPS, or 'Disable' to deactivate. When selecting 'Enable', proceed to the next step.

* LG Network Storage supports APC Style USB UPS only.

Synchronize with UPS	② Enable Disable
UPS Connection Type	③ USB UPS only usable
Shutdown Condition when Power Failure	④ Shutdown LG NAS after 5 seconds of power failure Shutdown LG NAS when UPS reports 'Battery Low' status
UPS Behavior After LG-NAS has Shutdown	④ Alive Turn off

Apply **Cancel**

- Decide whether to shut down LG Network Storage after designated time interval or when UPS power becomes low in case of unexpected external power cut.

* When setting it to shut down depending on remaining power of LG Network Storage, The time interval might differ from one UPS type to another.

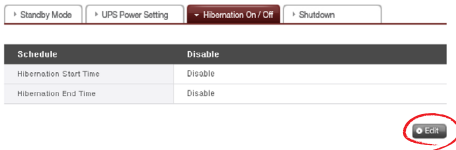
- ④ Decide whether to maintain UPS power when LG Network Storage shuts down due to unexpected power cut.
 - * If another device is connected to UPS, Please do not turn off UPS but keep the power on.
- ⑤ Click on the 'Apply' button to enter changes to the LG Network Storage. Click on the 'Cancel' button to discard changes.

Hibernation Mode On/Off

LG Network Storage can cut off the HDD power for a designated time the user does not make use of the program, running LG Network Storage with minimum energy. Any time interval during the day may be set up for the max energy save mode. It should be noted that once the max energy save mode is set to begin at a certain time, it may terminate any work being processed.

* When the network is being used to transfer data or the BD/DVD drive is being used, the max energy save mode will not be initiated.

- ① For a new configuration, press the "edit" button.



- ② Select "apply" to activate or "cancel" to deactivate.
- ③ To select "apply", select "apply" in the schedule window and enter the beginning and ending time for LG Network Storage. The set-up time must have at least 5 minutes gap from the current time. For example, if the current time was 12:00, the max energy save mode beginning time must be set to after 12:05.
- ④ To save the current setting, press "apply".

- ⑤ Once it reaches the beginning time set up, the system automatically transitions into max energy save mode and on the LCD will appear a message, “Now Working. . .”



Now Working...

- ⑥ Once the system is fully in max energy save mode, the following message will appear on the LCD. At this stage, it is no longer possible to connect the network drive and various functions provided by LG Network Storage will be unavailable.



Hibernation Done

- ♣ Max energy save mode may also be accessed through the button in the front.

Shutdown

Do not go directly to the LG Network Storage, as LG Network Storage can be turned on and shut down via the web.



① Restart

- Ends all current operations and restarts the LG Network Storage.
- A warning will appear when clicking the button, and the system can be restarted by clicking on the 'OK' button.
- During restart web access is not available.

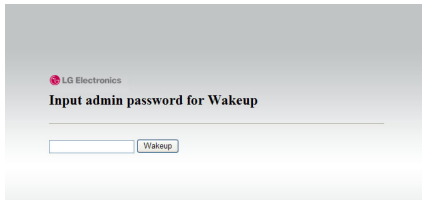
② Shutdown

- Ends all current processes and shuts down the LG Network Storage.
- A warning will appear when clicking the button, and the system can be restarted by clicking on the 'OK' button.
- During restart web access is not available

Activating the System Remotely

Once LG Network Storage has entered its max energy save mode, it can be activated through remote internet access. The screen accessible through the internet is slightly different from the log-in screen in the normal mode, and only the administrator can use the password to activate the system. Synchronization may take approximately a minute.

* In maximum energy save mode, log-in will only be accessible through http.



If the correct administrator's password is entered, the system will be synchronized automatically.



Language Setting

The web menu indicates a language selection capability.

- Click on the 'Edit' button to set language.

The screenshot shows the LG Network Storage web interface. The top navigation bar includes 'Home', 'Logout', and 'Info'. The left sidebar contains a 'Full Menu' with 'System' expanded, listing various settings like Network, Remote access, Time, Mail Notification, Volume, Selective mirror, Power, Language (circled in red), and Firmware. Below this are categories like Share, Blu-ray, Service, Mobile Device, and Information. The main content area is titled 'Language' and contains a table with two rows: 'Web Default Display Language' set to 'English' and 'Client Language' set to 'CP949'. An 'Edit' button (circled in red) is located at the bottom right of the table.

Web Default Display Language	English
Client Language	CP949

- Select a desired language out of Korean, English, French, Spanish, and German and click on the 'Apply' button.

* The language of selection will be the default language used when the user first accesses the web.

* If the browser has been set up to use cookies, the last language used for the computer in its previous log-in will be the default language for the next log-in.

* Client language: Select the language that fits user's client environment. (e.g.: FTP available). For use of multiple languages, select unicode. Unicode can be selected only if user's program supports it.

Firmware

LG Network Storage firmware settings can be changed (Upgrade, Initialization, Configuration and Backup/Restore).

LG Network Storage

Home Logout Info

Full Menu Short Menu

System

- Network
- Remote access
- Time
- Mail Notification
- Volume
- Selective mirror
- Power
- Language
- Firmware**
- Share
- Blu-ray
- Service
- Mobile Device
- Information

WebDAV Tomcat File Viewer Help

Firmware

Upgrade Initialization Configuration Backup

System Info

Please install the downloaded file to upgrade your system

Category	Version Information	Last Updated	
System	0.9.9.1676	2009-08-19	<input type="text"/> <input type="button" value="Browse..."/>
Optical Disc Drive	T100	2009-08-05	<input type="text"/> <input type="button" value="Browse..."/>

To upgrade the system, please check if the newest version is available for your system first

Upgrade

LG Network Storage system and Blu-ray/DVD Driver firmware can be downloaded from the product web site, and can be used for upgrading.

Systems with a fire wall do not allow upgrades to be installed

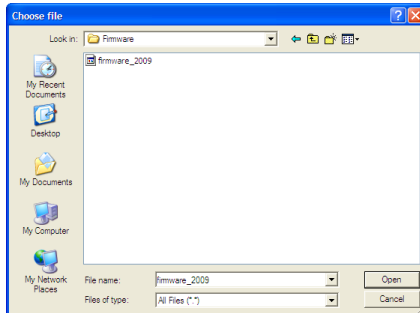
Please install the downloaded file to upgrade your system

Category	Version Information	Last Updated	
System	0.9.8.1661	2009-07-29	<input type="text"/> <input type="button" value="Browse..."/>
Optical Disc Drive	T100	2009-07-29	<input type="text"/> <input type="button" value="Browse..."/>

To upgrade the system, please check if the newest version is available for your system first

[System Firmware Upgrade]

- ① Verify connection to the Internet and download system firmware for the LG Network Storage from the product site linked below.
☞ <http://www.lge.com>
- ② Press the “find” button to select the system firmware downloaded from the product site.



- ③ Press the “upgrade” button to Install the selected system firmware to LG Network Storage. The upgrade progress may be viewed on the LCD in the front.



- ④ When upgrade is finished, the system will automatically reboot. The web connection will be automatically terminated and therefore should be reconnected.

[Blu-ray/DVD Drive Firmware Upgrade]

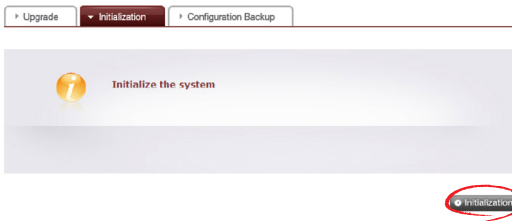
- ① Verify connection to the Internet and download the firmware for the Blu-ray/DVD drive attached to the LG Network Storage from the product site linked below.
☞ <http://www.lge.com>
- ② Select the Blu-ray/DVD drive firmware downloaded from the product site.
- ③ Install selected Blu-ray/DVD drive firmware.
- ④ When upgrade is finished, the version of installed Blu-ray/DVD drive firmware will be indicated



*** For stability of data, a backup of the LG Network Storage is strongly recommended before upgrading. Installation takes between 1 to several minutes. Advance access of other client users to the LG Network Storage while upgrading firmware is forbidden.**

Initialization

LG Network Storage initialization function. Clicking on the 'Initialization' will Initialize the system.



- * Caution must be taken when changing the settings, for post Initialization all-user information and data will be deleted.**
- * Initialization will take about 10 minutes.**

Configuration Back-up

This allows the back-up/recovery of settings for LG Network Storage at a certain time. Network settings (host name, IP address, workgroup), time setting (date/time, NTP), mail notification service setting, share administration (user, group, folder security), service setting values may be backed up but user data requires separate back-up.



[Backup]

Save the current user configuration.

* 5 backup files can be saved at maximum.

[Restore]

- ① Select the backup file of the time point to restore.
- ② Click on the 'Restore' button and reconfigure the user configuration.

[Save Settings to PC and Restore]

During initialization of NAS, configuration files can be saved to PC for later restoration.

[Save Configuration Files to PC]

Choose configuration files to be saved to PC and click on the 'Save' button to save them to PC.

[Restore NAS User Settings Saved on PC]

NAS settings can be restored using configuration files saved on the PC.

1. Choose the 'Restore LG Network Storage configuration from configuration file backed up in PC' menu and select from saved configuration files using 'Find'.
2. Select the configuration file to use for restoration and click on 'Restore' to change NAS settings as selected.

LG Network Storage Share Management

This function allows you to create users and groups as well as folders, and hence change settings for their access authorization.

User

Current registered users appear, so new users can be created and registered user information can be modified or deleted.

Registered User List

User ID	User Name	E-mail	Description
<input type="checkbox"/> admin	System Admin		Default System Administrator

[Create User]

- ① Click on the 'Create User' button.
- ② Enter user ID. User ID cannot be overlapped.

Create User

User Information	
② User ID *	<input type="text"/>
③ User Password *	<input type="password"/>
④ Confirm Password *	<input type="password"/>
⑤ User Name	<input type="text"/>
⑥ User Description	<input type="text"/>
⑦ User E-mail	<input type="text"/>
<input type="checkbox"/> Send Registration Info	

- ③ Enter user password.
- ④ Enter user password again for confirmation.
- ⑤ Enter user's name.
- ⑥ User description can be added.
- ⑦ Enter user e-mail

As long as mail server settings are correct, the registration result will be sent to the entered e-mail address. For details concerning mail server settings, refer to **<mail Notification>**.

[Edit User]

Entering editing mode by clicking on the user name in the registered user list, with the exception of the ID, all user information can be altered.

Registered User List

User ID	User Name	E-mail	Description
admin	System Admin		Default System Administrator
<input type="checkbox"/> jun/young	NIC1		tester

Group

Current registered groups are displayed. Groups can be created and deleted, as well as the addition or removal of users in registered groups.

The screenshot shows the LG Network Storage web interface. The top navigation bar includes 'Home', 'Logout', and 'Info'. The left sidebar contains a 'Full Menu' with 'System', 'Share', 'User', 'Group' (circled in red), and 'Folder'. Below this are 'Blu-ray', 'Service', 'Mobile Device', and 'Information'. The main content area is titled 'Group' and contains a 'Registered Group List' table. The table has two columns: 'Group Name' and 'Group Description'. It lists one group: 'users' with the description 'System user Group'. At the bottom right of the table area, there are two buttons: 'Create New Group' (circled in red) and 'Delete'.

[Creating a New Group]

- ① Click on the 'Create New Group' button.
- ② Enter group name.

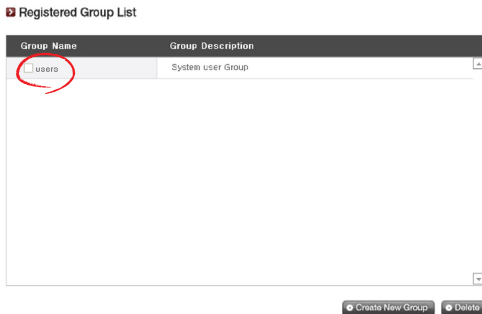
The screenshot shows the 'Create New Group' dialog box. It has a title bar 'Create New Group'. Below the title bar are two input fields: 'Group Name' (circled with 2) and 'Group Description' (circled with 3). Below these is a section titled 'Choice of Group Member' containing a table with columns 'User ID', 'User Name', and 'Description'. The table lists two users: 'admin' (System Admin) and 'junhyung' (NC1). The 'admin' user is selected, indicated by a checked checkbox and circled with 4. At the bottom right of the dialog are 'Save' and 'Cancel' buttons.

User ID	User Name	Description
<input checked="" type="checkbox"/> admin	System Admin	Default System Administrator
<input type="checkbox"/> junhyung	NC1	tester

- ③ Enter group description.
- ④ Select user to be added to the group by clicking on the corresponding checkbox. To remove a user from the group, deselect the user by clicking on the the checkbox again.
- ⑤ When user selection is done, click on the 'Save' button to create the group.

[Editing Groups]

By clicking on the 'Group Name' link in the registered group list, group attributes can be altered.



Folder

Current registered folders are displayed. A folder can be created/changed/deleted for file sharing and/or authorization settings access changed to the created folder.

LG Network Storage

Home Logout Info

Full Menu Short Menu

System

Share

User

Group

Folder

DVD

Service

Mobile Device

Information

WebDAV Tomcat File Viewer Help

Folder

Registered Folder List

Shared Folder Name	Shared Folder Description
<input type="checkbox"/> service	Default Service Folder
<input type="checkbox"/> volume1	Default folder of volume1
<input type="checkbox"/> volume2	Default folder of volume2

Add Folder? Delete

[Create New Folder]

- ① Click on the 'Add Folder' button.
- ② Enter the shared folder name.

Create New Folder

② Shared Folder Name

③ Folder Description

④ Volume

⑤ Protocol Support

⑥ Folder Attribute

⑦ Recycle Bin

⑧ Folder Access Restriction

⑨ Local User

⑩ Local Group

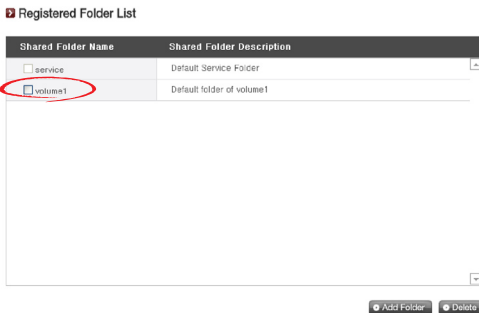
User Name	Read /Write	Read Only
admin	<input checked="" type="checkbox"/>	<input type="checkbox"/>
junhyung	<input type="checkbox"/>	<input type="checkbox"/>

- ③ Enter folder description.
- ④ Set the volume where the folder will be created if there is more than one.
- ⑤ Decide whether to permit folder sharing through SMB, AFP, FTP or Webday protocol.
 - Windows: Activates folder sharing through SMB protocol on Windows/Mac/Unix. Refer to chapter 6 for connection details .
 - AFP (Mac): Activates folder sharing through AFP on Mac client.
 - FTP: Activates folder sharing through FTP.
 - Webday: Activates folder sharing through Webday
- ⑥ During network search, currently shared folders can be set up not to appear.
 - * If 'hidden', such folders will not be available for sharing through AFP/FTP/Webday.
- ⑦ Create a trash box within the folder.

When deleting data while the trash box is active, all the deleted files will go to 'trash box' folder within the shared folder.
- ⑧ Set folder access restriction. If 'Disable' is checked, users can access/use without restriction.
- ⑨ Assign user/group to use the folder. Unassigned users do not have access to the folder.
 - * When a directory is activated at the 'Network > Workgroup/Domain' menu on the left, additional users and groups will appear.

[Folder Attributes]

By clicking on the folder name in the registered folder list, with the exception of the folder name, all its information can be altered.

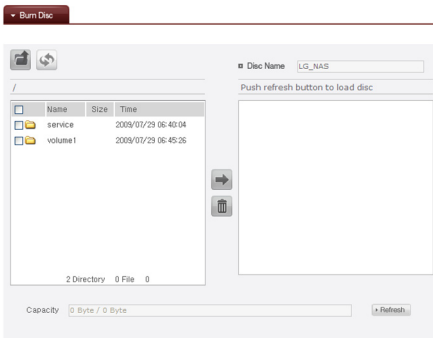


Blu-ray / DVD

The built-in Blu-ray/DVD drive allows direct copy of data from discs to LG Network Storage. Furthermore, secondary backup of data using the Blu-ray drive makes data management safer and more efficient.

Burning

Burning the LG Network Storage data to disc is possible using the Blu-ray/DVD drive.



Burn Disc

Burning LG Network Storage files to disc is possible.

[Button functions]



: Moves to upper folder.



: Refreshes the current folder.

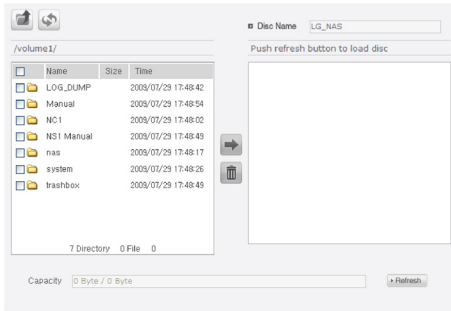


: Files or folders selected on the left window are sent to the right window to organize a list for recording.

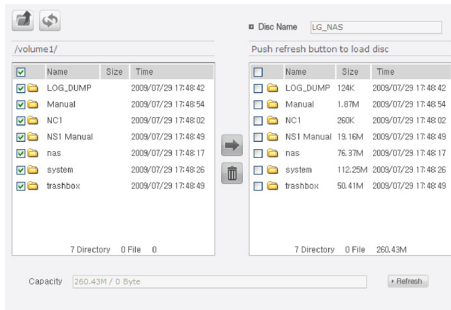


: Deletes selected files or folders from the list organized for recording on the right window.

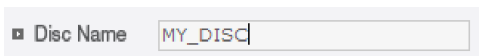
- Move the intended folder or file to the destined location.



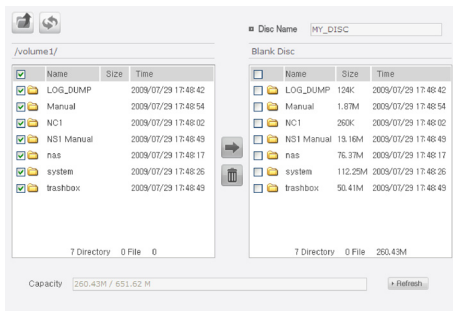
- Selecting a folder or file to record and move to the right side produces a configuration data list.



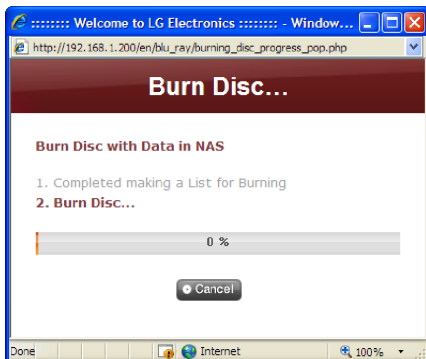
- Specify disc name in the "Disc Name" window



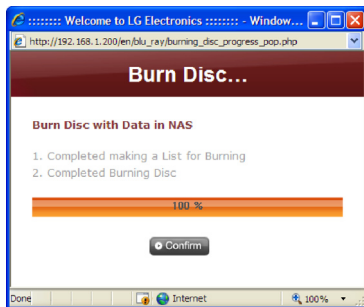
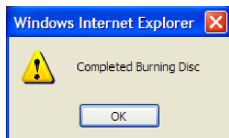
- ④ Click on the **Refresh** button and confirm that disc writing is possible as indicated in the disc status box.



- ⑤ Pressing the **Burn** button begins the burning process. The burning process is accompanied by a progress bar display. To cancel the process, click on the 'Cancel' button, which appears with the progress bar.



- ⑥ At the end of the burning process, the tray ejects and the disc can be removed.



Service

DLNA(Digital Living Network Alliance)

DLNA, which stands for Digital Living Network Alliance, allows sharing multimedia data such as music, video, or images saved in other devices through connecting digital devices such PC, hard disks, or digital TVs through the home network. DLNA comprises DMS (Digital Media Server), which sends images, music and movie data, and DMP (Digital Media Player), which receives data. In order to fully utilize the DLNA function, the product must be DLNA certified. This product adheres to the Digital Media Server (DMS) function of the DLNA standard functions. In order to fully utilize the DLNA function, the product must be DLNA certified. This product adheres to the Digital Media Server (DMS) function of the DLNA standard functions.

[Activate/Deactivate DLNA]

In order to activate or deactivate DLNA, the below procedures should be followed.

Follow the below instructions.

- ① Open DLNA from the webpage.
- ② The top section will show the current status of DLNA. To activate the Media Server (DMS), click "apply".

The screenshot displays the LG Network Storage web interface. On the left, a navigation menu lists various services, with 'DLNA' highlighted and circled in red. The main content area shows the 'DLNA' settings, where the 'Enable' radio button is selected and circled in red. Below this, there is a 'Source' field containing '/service/DLNA' and an 'Apply' button.

- ③ The source path refers to the location the multimedia data is currently saved. In order to utilize the multimedia data through DLNA, locations of the saved data must be determined. DLNA service will only be applicable to pre-set DLNA source folders.
- ④ To activate, please press the “apply” button. To deactivate, please select “Do not apply” and press the “apply” button.

[Save Multimedia data in source path]

Multimedia data in LG Network Storage may be read, written and shared through the network.

- ① Run Internet Explorer.
- ② Copy the multimedia file in service\DLNA.

♣ Note

- ① Do not delete the selected source path (default: \service\DLNA). This may terminate the multimedia sharing.
- ② Use compatible multimedia file formats. Incompatible file formats may not run properly.
- ③ Formats incompatible with the Digital Media Player, such as TV, may not run properly even if they were compatible with LG Network Storage.

[View Multimedia Using DLNA]




Using DLNA of a PC with Microsoft® Windows7®


- ① Go to Control Panel > Hardware and Sound > Add a device.
- ② Once LG Network Storage is selected, click Next and recognize device.
- ③ Run Windows Media Center or Windows Media Player.
- ④ The multimedia data saved in LG Network Storage may be viewed by selecting LG Media Server under Library.

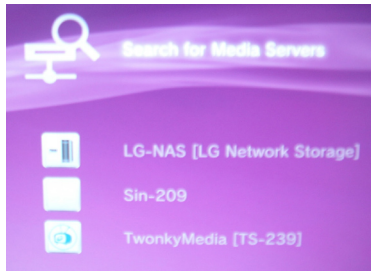
♣ Note

- For detailed instructions on Windows Media® Player 11, refer to the Help function of Windows Media® Player 11.
- Some user PC may have installed its own unique DLNA server software. For detailed instructions, refer to the user manual of the user PC.

[Playing DLNA server contents on PS3™]

Once PS3™ is turned on, the DLNA server within the network will automatically be searched and the found server icon will appear on  (images) /  (music) /  (video).

- ① Select the DLNA server icon for log-in from  (images) /  (music) /  (video) of the home menu. All applicable folders and files supported by PS3™ will be displayed.



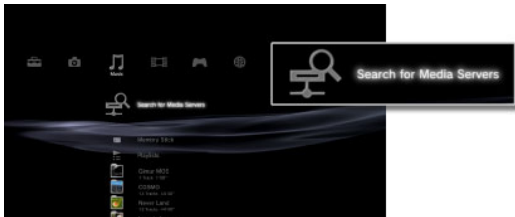
- ② Select the file to play.

♣ Note




- PS3™ must be connected to the network. For detailed instructions on the network set-up, refer to (Set-up) > (Network set-up) > [Internet connection set-up].
- If IP address allocation method has been altered from AutoIP to DHCP in the current network, go to (Media server search) and re-locate DLNA server.
- The DLNA server icon will only appear if (Set-up) > (Network set-up) > [Media Server Connection] has been activated.
- Displayed folder name may vary depending on the DLNA server. LG-NAS is the default value.
- Certain files may not play or may have limited access during play depending on the user's device.
- Copyright protected contents shall not play.
- Data file names of data saved in server not compatible to DLNA may include "**". These files may not play in PS3™. Some files may play in PS3™ but not play in other devices.

[Manually search DLNA server in PS3™]

DLNA server within the same network may be manually located. This may be useful when DLNA server does not appear automatically after PS3™ has been turned on. Select  (Media server search) from  (images) /  (music) /  (video). Results should appear and returning to home menu will list available DLNA server.



♣ Note

 (Media server search) will only appear if  (Set-up) /  (Network set-up) [Media server search] has been activated.

[Using DLNA in Digital Image Frame]

- ① Activate the DLNA function in LG Network Storage.
- ② Perform a default set-up and driver set-up following the Digital Image Frame user manual.
- ③ Search the LG Network Storage in the network using the Digital Image Frame's Explore function.
- ④ Set up to connect LG Network Storage in Digital Image Frame.
- ⑤ View images in Digital Image Frame.

♣ Note

- To see compatible image file format and how to access and view images, refer to the Digital Image Frame user manual.
- For information on connection between the Digital Frame and LG Network Storage, refer to the Digital Image Frame's DMA user manual.

[Using DLNA as AV Device]

Use contents by activating the DLNA function connected to the network. Set-up procedure may vary depending on connected device. For detailed instructions, refer to the relevant device user manual.

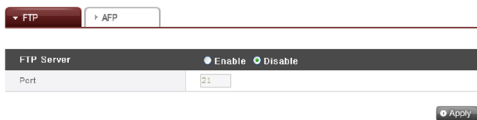
Network Server

Access to the LG Network Storage through FTP/FTPs or AFP is configured with this function.

* For router use, the router settings need to be changed. Please refer to port forwarding of DMZ settings in the router's manual.

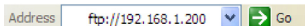
FTP

An FTP offers a handy environment when accessing LG Network Storage on the Internet.



The use of FTP service can be established through "Enable". The Windows image is explained here. The method below is applicable to other OSs.

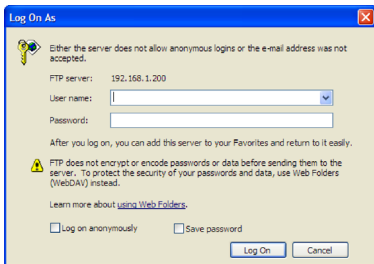
- ① Use the FTP connection program, or open explorer and input the address ftp://[address]:[port number]. If the IP address is unknown, refer to **<PC Application Program Usage>** or **<LG Network Storage Information Confirmation>**. Port number may be changed to a number determined by the user. The default FTP port number is 21. To use the default value (21), user may log on without inputting the port number.



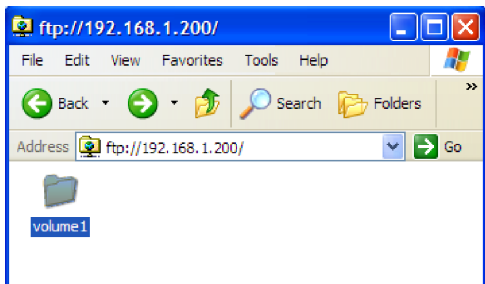
* Using the DDNS service offered by LG Network Storage will log on to ftp://myname.lgnas.com:port number. For more details, please refer to system remote control <DDNS>.

* To use the default port value 21, user may log on without inputting the port number through ftp://IP address or ftp://myname.lgnas.com.

② Input the user name and password and login



③ Look at the sharing folder. Folders and files can be managed via drag and drop, allowing for name change and delete. Depending on the local network environment, use of the firewall in the FTP server may be prohibited. For FTP server problems, consult the router's manual or contact the network administrator.



* LG Network Storage supports FTPS with advanced security on the existing FTP for better protection of the user's data traveling through the internet. To use FTPS, an FTP connection program that supports FTPS must be used. The explorer program supported by the Windows operating system does not support FTPS. Generally most commercial FTP connection programs support FTPS and more details may be found in the relevant program manual. (A typical free FTP connection program such as File Zila does not allow access to LG Network Storage through FTPS.)

AFP

The AFP offers a similar environment to Windows folder sharing.

* AFP is available within networks with the installed LG Network Storage, but not for external access without network setting changes due to firewall and other restrictions.

* If there are no special reasons Windows Sharing is recommended, as the Mac OS X basically supports Windows Folder Sharing.

Network Printer

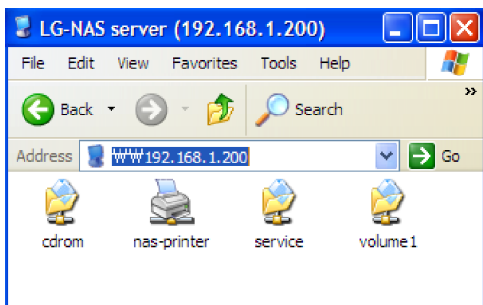
The network printer can be used by connecting the USB printer to the LG Network Storage.

- ① Select Service > Network Printer from the administrator's web menu.
- ② Check "Enable", click the "Apply" button.



[Windows users]

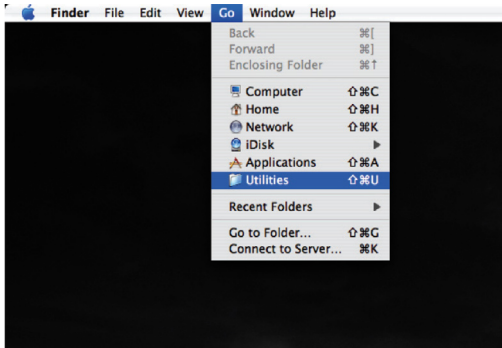
- ① In the web menu go to "Enable" to connect the network printer, after which an LG Network Storage printer icon appears.



- ② Doubling clicking on the icon shows the progress of the printer driver installation. For installation issues refer to the printer manual.
- ③ If installation is unsuccessful use the network printer service.

[Mac users]

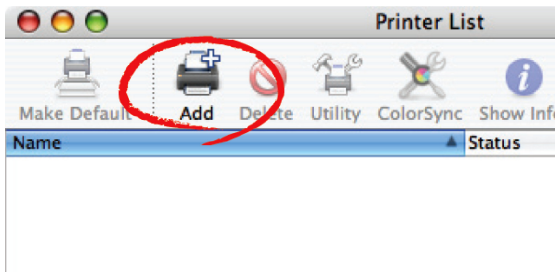
- ① Click on Go/ Utilities in the tool menu.



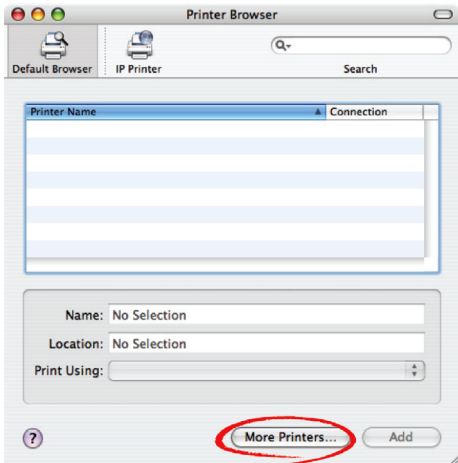
- ② Click on the Printer Setup Utility.



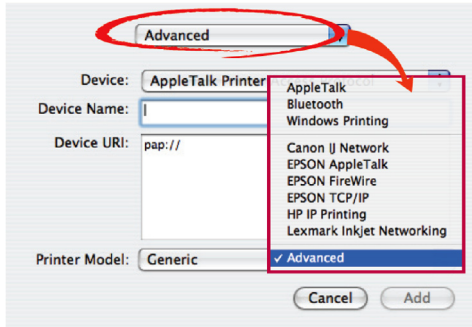
③ Click on Add.



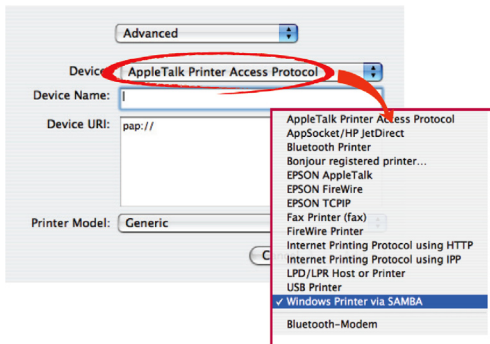
④ Hold the alt key down while clicking on More Printers.



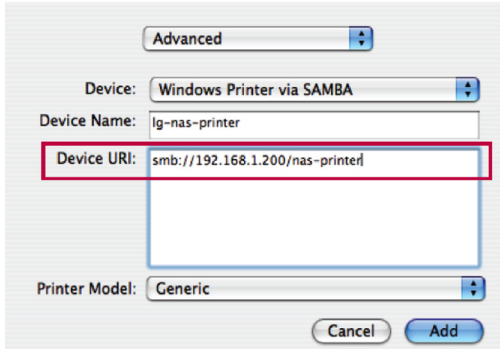
- ⑤ In the pop up window:
- i. Select Advanced.



- ii. Select Windows Printer via SAMBA.



- iii. Input the printer URI. The form name is smb: /LG Network Storage IP/printer. The printer name can be found in the Device Configuration(device config)/ USB Printer page.

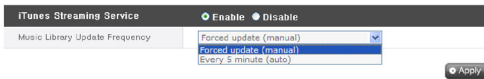


The screenshot shows a configuration form for adding a printer. At the top, there is a dropdown menu labeled 'Advanced'. Below it, the 'Device' dropdown is set to 'Windows Printer via SAMBA'. The 'Device Name' field contains 'lg-nas-printer'. The 'Device URI' field is highlighted with a red border and contains 'smb://192.168.1.200/nas-printer/'. Below this is a large empty text area. The 'Printer Model' dropdown is set to 'Generic'. At the bottom right, there are two buttons: 'Cancel' and 'Add'.

- iv. In Printer Model, select Generic.
- v. Click Add.
 - * By pressing the alt key while clicking on More Printers, a range of printers can be seen. There are no other options.
- vi. The printer appears in the printer list. Now the printer is ready for use.
 - * Linux users must consult the OS manual, or inquire at the printer company.

iTunes

Using the iTunes services and recreating music files stored to the LG Network Storage through PC/Mac iTunes programs is possible. Music does not affect the PC/Mac storage space as transfer is done through streaming.



- ① For required use, select 'Enable' for iTunes Streaming Service.
 - ② Set Music Library Update Frequency.
 - Forced update (manual): Activate once the music file service for Streaming to begin the service. To create a music file, time is needed hence manual updates are recommended.
 - Every 5 minutes (auto): Every 5 minutes, the music file list is updated periodically. For updated music lists, the client program must be restarted.
- * Itemizing a music file list may be time consuming, the Foced update option is recommended unless music files are updated frequently.

Time Machine

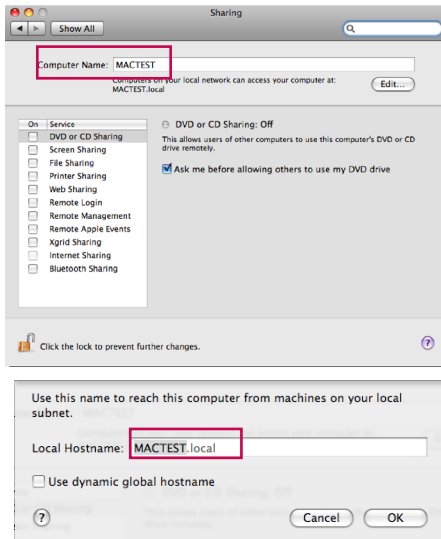
The Time Machine service is the automatic back-up function built in Mac OS X and allows the Mac data copies to be stored in LG Network Storage in their latest version.

♣ This service is available in only Mac OS X version 10.5 Leopard or later versions.

[Web Set-up]

① Enter the host name.

The host name is the local host name after deleting “.local” found under “System Environment Set-up” → “Shared” → “Edit” .



[Mac OS]

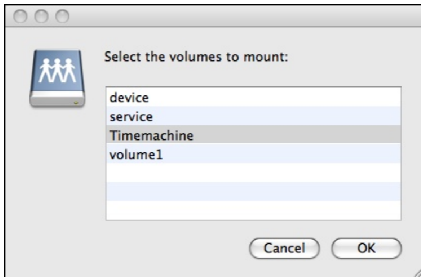
- ① Go to “Move” → “Connect to Server” and enter “afp://LG Network Storage IP address” under “Server Address”, then click “Connect”.
 - * The AFP function must already be activated under network server settings.



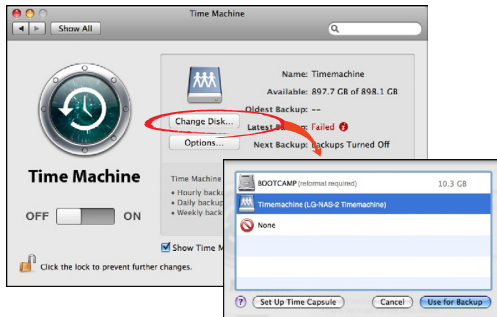
- ② If the log-in window appears, enter the name and password and click “Connect”. Enter “admin” for name and the administrator’s password for password.



- ③ When the mount volume window opens, select “Timemachine” and press the “OK” button.



- ④ Go to “Settings” → “Time Machine”, press “Change disk...”, select LG Network Storage “Timemachine” and press “Enable as back-up”.



- ⑤ When the log-in window appears again, repeat instruction (2) and the Time Machine will be “On” and back-up begins in LG Network Storage.

iSCSI

This allows for the user to use the LG Network Storage Blue-ray/DVD drive as a CD drive. The LG Network Storage iSCSI service allows multiple users' log-in and usage.

[iSCSI Initiator Installation]

In order to use the iSCSI, the Initiator program must be installed in the computer

A. Initiator Installation on a Windows PC

For Windows XP, download the installation program from the below Microsoft website

☞ Website

<http://www.microsoft.com/downloads/details.aspx?familyid=12cb3c1a-15d6-4585-b385-befd1319f825&displaylang=en>

For Windows Vista, the operating system already includes a program and no additional installation is required.

B. Initiator Installation on a Linux PC

For Linux, the Initiator may be installed automatically from the website.

For ubuntu Linux, enter

\$ sudo apt-get install open-iscsi

and for fedora, enter

\$ yum install open-iscsi

to automatically install the Initiator.

☞ Website

<http://www.open-iscsi.org/>

C. Initiator Installation on a Mac

Install the globasan iSCSI initiator. This can be downloaded from the “studio network solutions” homepage.

Website

<http://www.studionetworksolutions.com>

[Server Synchronization]

On the webpage, click “Enable” and then click “Apply”. Once the iSCSI is activated, certain functions such as web burning will be limited.

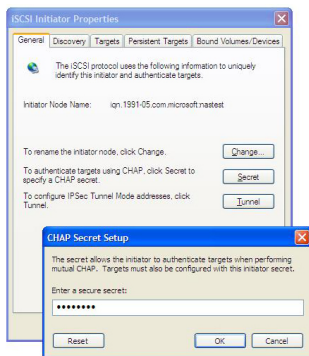
[iSCSI Connection]

A. Connection on a Windows PC

- ① Activate the iSCSI initiator.

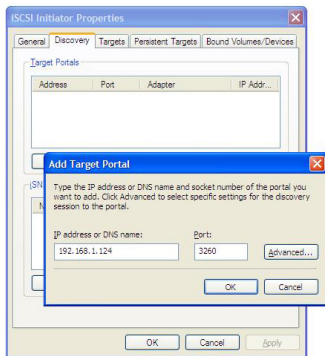
For Windows Vista, go to “Control panel → iSCSI Initiator” and activate the Initiator. For Windows XP, go to the Start menu and select iSCSI Initiator from the program list.

If a mandatory certification (CHAP) procedure has been set up in the web setting, enter the required information under the General tab by pressing the Secret button.

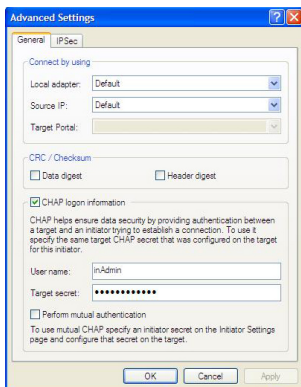


② Find the iSCSI target (LG-NAS).

Click on the Discover tap on the top of the iSCSI Initiator program. Then click the “Add” button on the bottom. Then a new window to Add Target Portal (picture below) should appear. Enter the target (LG Network Storage) IP address.

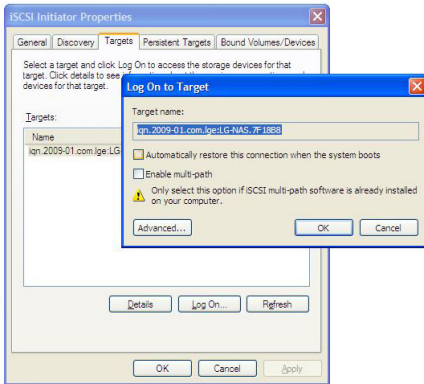


If a mandatory certification (CHAP) procedure has been set up in the web setting, enter the required information by pressing the Advanced button in the above window.



③ Log in.

Go to the Targets tab on the top of the iSCSI Initiator program. If all of the above procedures have been followed properly, the iSCSI Initiator will find and list the information for the target (LG-NAS). Select the relevant target name and press the “Log On . . .” and click “OK” from the pop-up window.



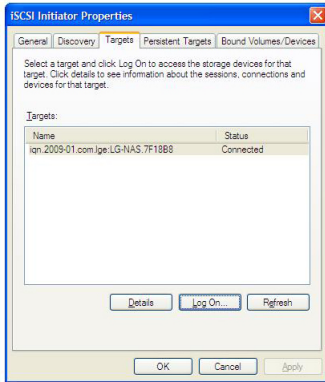
④ Check that the target has been connected as follows.

Target can be checked by going to Device administrator → DVD/CD-ROM drive.

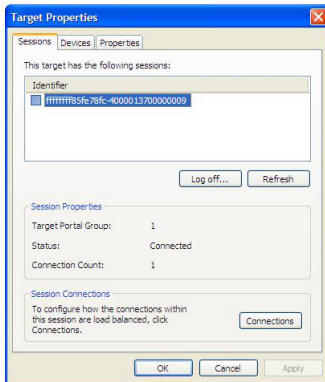
⑤ NAS built-in ODD can be accessed by using tools such as CyberLink Power2Go.

⑥ Log out when done.

Go to the Targets tab on the top of the iSCSI Initiator program. Then click on the Details button on the bottom.



Select the relevant Target Name and click “Log Off. . . “



※ Due to compatibility issues between iSCSI Initiator and Windows Vista, the Windows Vista built-in ODD record functions, mastered or live file system, may not be available.

B. Connection on a Linux PC

- ① Activate the iSCSI initiator.

```
$ /etc/init.d/open-iscsi start
```

- ② Find the iSCSI target. If the LG NAS (target)'s IP address is 192.168.10.2, the target is:

```
$ iscsiadm -m discovery -t sendtargets -p 192.168.10.2
```

Once target is found, execute the above command, which will display the target name. The following is an example:

```
$ 192.168.10.2:3260,1 iqn.2009-01.com.lge:LG-NAS.123456
```

- ③ Log in. Log-in command for the above target name is:

```
$ iscsiadm --mode node --targetname iqn.2009-01.com.lge:
LG-NAS.123456 --portal 192.168.10.2:3260 --login
```

- ④ Confirm the target connection using the below command.

```
$ cdrecord -scanbus
```

- ⑤ ODD tools such as cdrecord can be used to utilize the NAS built-in ODD.

☞ **Website**

☞ <http://cdrecord.berlios.de/private/cdrecord.html>

- ⑥ Log out when done. Use the following command:

```
$ iscsiadm --mode node --targetname iqn.2009-01.com.lge:
LG-NAS.123456 --portal 192.168.10.2:3260 --logout
```

[Connection for CHAP certification]

- ① Open the open-iscsi set-up file “/etc/iscsi/iscsid.conf” and set up the CHAP certification. Follow the below instructions. (The CHAP certificate password must match the password set up for the iSCSI service on the LG Network Storage webpage.)

```
discovery.sendtargets.auth.authmethod = CHAP
discovery.sendtargets.auth.username = inAdmin
discovery.sendtargets.auth.password = password set up (Target Secret)
```

```
node.session.auth.authmethod = CHAP
node.session.auth.username = outAdmin
node.session.auth.password = password set up (Initiator Secret)
```

- ② Activate open-iscsi.

```
$ /etc/init.d/open-iscsi start
```

If the open-iscsi was already activated, restart.

```
$ /etc/init.d/open-iscsi restart
```

- ③ The rest of the procedures are the same as for [Connection to a Linux PC].

☞ Websites

[http://www.cyberciti.](http://www.cyberciti.biz/faq/howto-setup-debian-ubuntu-linux-iscsi-initiator/print/)

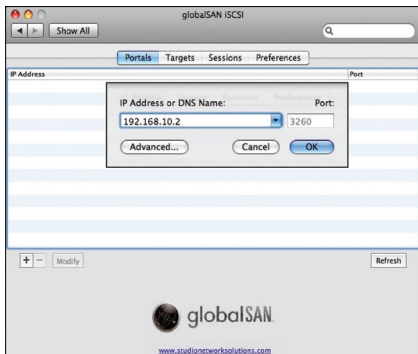
[biz/faq/howto-setup-debian-ubuntu-linux-iscsi-initiator/print/](http://manpages.ubuntu.com/manpages/hardy/man8/iscsiadm.8.html)

<http://manpages.ubuntu.com/manpages/hardy/man8/iscsiadm.8.html>

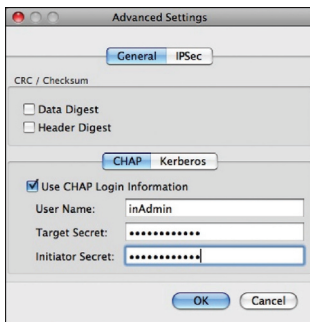
<http://wiki.debian.org/iSCSI/open-iscsi>

C. Connection on a Mac

- ① Activate iSCSI initiator.
Go to System Preferences -> globalSAN iSCSI-
- ② Find the iSCSI target. If the IP address is 192.168.10.2, see below.
Go to globalSAN iSCSI -> Portals and press "+" and enter 192.168.10.2 and press "OK".

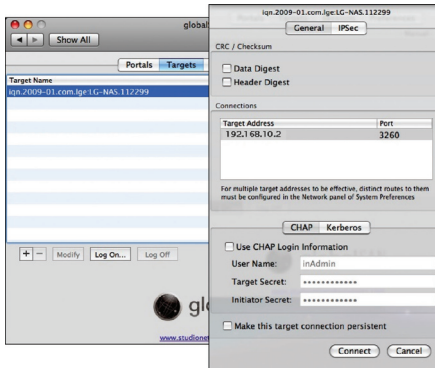


If a mandatory certification (CHAP) procedure has been set up in the web setting, enter the required information by pressing the Advanced button in the above window.



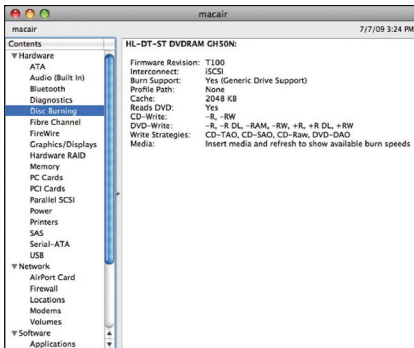
③ Log in.

Go to globalSAN iSCSI -> Targets, select the relevant target name and click “Log On. . . .” and then “Connect” on the pop-up window.



④ Confirm that the target is connected as follows.

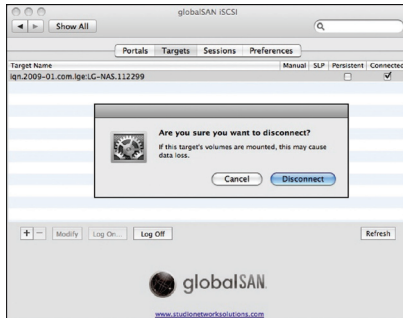
Go to Utilities -> System Profiler and check that “iSCSI” appears under “Disc Burning” interconnect.



Tools such as Disc Utility/Finder can be used to utilize the NAS built-in ODD.

⑤ Log out when done.

Go to globalSAN iSCSI -> Targets, select the relevant target name and click “Log Off. . . .” and then “Disconnect” on the pop-up window.



* Notes

Because the LG Network Storage Blue-ray drive network connection allows any logged-in user to use the program, it is important that other users are not interrupted. For example, in the case that other users are burning data using the Blue-ray drive, it is recommended to avoid commands that may interfere with the work, such as “open tray”.

In addition, if data writing/reading on the LG Network Storage is in progress through the network drive connection, there may be substantial data transfers within the network and cause difficulty in data transfers through the iSCSI, resulting in slower and limited writing/reading speed per disk.

 Website

<http://www.studionetworksolutions.com>

Torrent

A P2P file sharing program that allows simultaneous download of files from multiple locations, Torrent does not have its own search engine, so user must obtain a file in format .torrent, register to the torrent program and download the file.

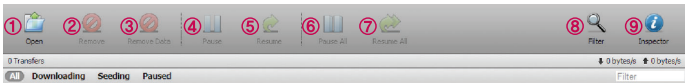
To use the Torrent function, user must “Enable” the Torrent from the service menu. Click on the Torrent icon on the top and open the Torrent program administration window.



[Download]

- ① Click on the Open icon.
- ② On the pop-up window:
 - i. Click the Find button and select the .torrent file previously downloaded.
 - ii. Or enter the path to the .torrent file in “or enter a URL”.
- ③ Once completely downloaded, the file can be found in the network folder **[Refer to How to Use the LG Network Storage Network Folder]** under \service\Torrent.

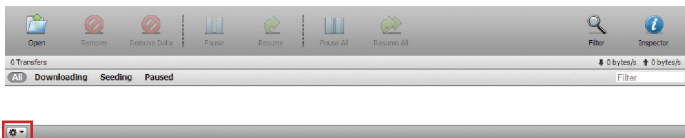
[Use]



- ① Open: Register the file to download (.torrent).
- ② Remove: Removes the selected file from the list. This does not delete the file itself.
- ③ Remove Data: Removes the selected file from the list. This deletes the file.
- ④ Pause: Temporarily stops the downloading process of the selected file.
- ⑤ Resume: Resumes the downloading process of the selected file temporarily stopped.
- ⑥ Pause all: Temporarily stops the downloading process of all files.
- ⑦ Resume all: Resumes the downloading process of the all files temporarily stopped.

- ⑧ Filter: Hides or unhides the filter item.
- ⑨ Inspector: Hides or unhides the information for the selected file.

[Set-up]



- ① Click on the set-up icon.
- ② Select Preferences and set up the port to be used, transfer speed limit, etc.

Preferences
Add transfers:

Download to: **/service/Torrent**

Start transfers when added

Network:
Incoming TCP Port:

Encryption:
 Ignore unencrypted peers

Limit total bandwidth:

Download Rate: KB/s

Upload Rate: KB/s

Web Client:
Refresh Rate: seconds

USB Sync

This function enables data transfer between USB devices, memory cards or external e-SATA devices and the LG Network Storage.

***Note:** Some particular devices may require an adapter. (For a compatible memory card list, please refer to the homepage, <http://www.lge.com>. Use of an incompatible device may cause malfunction of the LG Network Storage.)

USB Device & Memory Card

USB device and memory card data can be backed up with the LG Network Storage. A separate process can be created for each USB device. One task can be performed using the USB device ID, target folder and back up method information, as well as back up period information.

Mobile Sync

USB Port	Manufacturer	Product
USB1	LG	X_TICK

[Current USB List]

USB device and memory card lists on the LG Network Storage are displayed.

<Backup Configuration Procedures>

- ① Connect a USB or memory device to the LG Network Storage.
 - * On the back panel of the LG Network Storage there are 2 USB ports, on the front panel of the LG Network Storage there is 1 USB port and 1 memory slot.
- ② Refresh the list to itemize.
 - Depending on which ports they are plugged in, USB1, USB2, USB3 and MemCard will appear.
- ③ Select the device for backup and click on the 'Create' button.
- ④ Specific options for Backup are listed.

Current USB List USB Sync Setting

Create New Backup Schedule

USB Sync	
⑤ Name	LG_X_TICK
⑥ Description	
⑦ Control Number	LG_X_TICK_4D0E752A
⑧ Destination	/service/backup/usb
⑨ USB auto sync	<input type="checkbox"/> USB auto sync
⑩ Backup Method	<input checked="" type="radio"/> Incremental <input type="radio"/> Full

Save Cancel

- ⑤ The task name is saved. (automatically generated)
- ⑥ The task information description is specified.
- ⑦ The selected device's unique ID is displayed. ID specific to the manufacturer information, product information, etc. are displayed.
- ⑧ The port with the device is displayed.
- ⑨ Each time the USB is plugged the USB is automatically recognized and back-up begins according to the settings. There is no need to press any button as a One Touch back-up. In the case that USB automatic synchronization is not selected, once the USB is recognized in the system, a message asking whether to back-up the USB will pop up on the LCD and back-up begin at the press of the Set button using the settings information from the Web. (One Touch back-up)
- ⑩ The backup method is specified.
 - Incremental: Backs up only additional information to the data previously backed up
 - Full: Backs up the entire source files.

Folders are created by "back-up date". For more information, refer to **[Incremental Back-up and Full Back-up]** on the back.

<USB Sync Setting>

The current task list is indicated and tasks may be created, edited, deleted or synched.

- ① Clicking on the 'Create' button allows for a new task to be created.
 - If the task name is selected, and the 'Delete' button is clicked, the task is deleted.
- ② If the list task name is clicked, editing is possible.

Name	Description	Backup Method	Auto backup
LG_X_TICK	test	incremental	off

<Incremental Back-up and Full Back-up>

For back-ups of removable storage devices, LG Network Storage supports Incremental back-up and Full back-up. Back-up data are saved in a folder designated by the user and in the Last Backup folder.

- Incremental: The Last Backup folder contains all data from the removable storage device. The user designated folder only contains additional data in the removable disk when compared to the Last Backup folder. .
- Full: Backs up the entire source files. Unlike the Incremental back-up, Full back-up saves all files in the user designated folder. (Last Backup folder is not used.)

The following is an example of Incremental back-up and Full back-up. For the 1st back-up (Jan 1, 2009) the USB contained the following files:

- a.txt
- b.txt
- c.txt

The Incremental back-up will create a folder for the back-up date with the above files. It also creates a Last Backup folder containing all of the files in the USB. The system folder structure is as follows:

```
`-- USB_LG_XTICK
   |-- 20090101
   |  |-- a.txt
   |  |-- b.txt
   |  `-- c.txt
   `-- lastbackup
       |-- a.txt
       |-- b.txt
       `-- c.txt
```

For the 2nd back-up (Jan 2, 2009), a.txt and b.txt had been deleted and d.txt and e.txt had been added.

```
c.txt
d.txt
e.txt
```

The 2nd back-up will also create a folder for the back-up date containing only the added or modified files. In this case, only d.txt and e.txt will be saved and the Last Backup file will contain all files in the current USB.

```
`-- USB_LG_XTICK
   |-- 20090101
   |  |-- a.txt
   |  |-- b.txt
   |  `-- c.txt
   |-- 20090102
   |  |-- d.txt
   |  `-- e.txt
   `-- lastbackup
       |-- c.txt
       |-- d.txt
       `-- e.txt
```

For the 3rd backUp (Jan 3, 2009), e.txt has been opened, modified and saved. Only e.txt file will be saved in the new folder. In the Last Backup folder, all files in the current USB, c.txt, d.txt and e.txt, will be saved as is.

```
`-- USB_LG_XTICK
  |-- 20090101
  | |-- a.txt
  | |-- b.txt
  | `-- c.txt
|-- 20090102
| |-- d.txt
| `-- e.txt
|-- 20090103
| `-- e.txt
`-- lastbackup
   |-- c.txt
   |-- d.txt
   `-- e.txt
```

If Full back-up had been selected for all 3 back-ups above, then the folder structure after the 3 back-ups will be as follows:

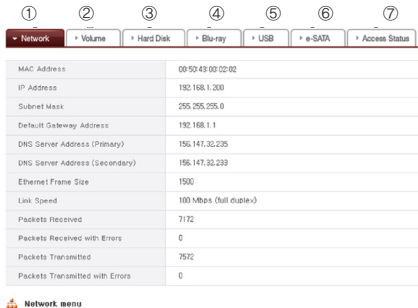
```
`-- USB_LG_XTICK
  |-- 20090101
  | |-- a.txt
  | |-- b.txt
  | `-- c.txt
|-- 20090102
| |-- c.txt
| |-- d.txt
| `-- e.txt
`-- 20090103
   |-- c.txt
   |-- d.txt
   `-- e.txt
```

Information


This shows network, volume, device status of the LG Network Storage and information about system log, connection log and self-diagnosis.

Status


Status of the LG Network Storage Network, Volume and external devices can be viewed. For more specific details or to make changes, clicking on the icons on the bottom will direct the users to the relevant webpage.




① Network		② Volume	③ Hard Disk	④ Blu-ray	⑤ USB	⑥ e-SATA	⑦ Access Status
MAC Address	00:50:43:00:02:02						
IP Address	192.168.1.200						
Subnet Mask	255.255.255.0						
Default Gateway Address	192.168.1.1						
DNS Server Address (Primary)	196.147.32.225						
DNS Server Address (Secondary)	196.147.32.239						
Ethernet Frame Size	1500						
Link Speed	100 Mbps (full duplex)						
Packets Received	7172						
Packets Received with Errors	0						
Packets Transmitted	7572						
Packets Transmitted with Errors	0						

 Network menu

- ① Mac Address, IP, Subnet Mask, Gateway, DNS Server, Ethernet Frame Size, link Speed, etc information can be viewed.
- ② Configured volume list and usage/RAID state information etc can be viewed.



Network		Volume	Hard Disk	Blu-ray	USB	e-SATA	Access Status
No	Name	RAID	Status	Capacity			
1	volume1	Z20G	active	1% 188M/Z20G			

 Volume menu

- ③ All hard disk information connected to the LG Network Storage can be viewed by Bay position

Bay No	Vendor	Model Number	Status	Capacity
B1	Hitachi	HD7721025SLA360	active	233 GB
B2	Hitachi	HD7721025SLA360	active	233 GB

- ④ The information pertaining to the Blu-ray drive connected to the LG Network Storage can be viewed.

Vendor	Model
HL-DT-ST	BD-RE BH10NS20

- ⑤ The information pertaining to the USB device and memory card connected to the LG Network Storage can be viewed.

USB Port	Manufacturer	Product
usb1	LG	X_TICK

- ⑥ The information pertaining to the e-SATA device connected to the LG Network Storage can be viewed.

Vendor	Model	Capacity
Hitachi	HTS542512K3S400	111.79G

- ⑦ User state currently connected to the LG Network Storage can be viewed. (SMB , FTP)

Service	User ID	IP Address
smb1a	admin	192.168.1.100

Log

The LG Network Storage service history can be displayed/saved.

The screenshot shows the LG Network Storage web interface. The top navigation bar includes 'Home', 'Logout', and 'Info' buttons. The left sidebar has a 'Full Menu' with categories: System, Share, Blu-ray, Service, Mobile Device, and Information. The 'Log' option under 'Information' is circled in red. The main content area shows a 'Log' section with tabs for System Log, Samba Log, FTP Log, and Self-diagnosis. A table displays log entries with columns for Date & Time and Log Information. A 'Save' button is visible at the bottom right of the log table.

- ① The system use history can be viewed.
- ② The share folder use history can be viewed.

Apr 30 10:03:29	LG-NAS smbda_audit[9151]: unlink myfolder/N_A_____R.jpg
Apr 30 10:03:29	LG-NAS last message repeated 2 times
Apr 30 10:03:23	LG-NAS smbda_audit[9151]: close fd 0
Apr 30 10:03:23	LG-NAS smbda_audit[9151]: mkdir myfolder failed: File exists
Apr 30 10:03:14	LG-NAS smbda_audit[9151]: unlink myfolder/news.txt
Apr 30 10:03:12	LG-NAS smbda_audit[9151]: close fd 0
Apr 30 10:03:11	LG-NAS smbda_audit[9151]: close fd 0

- ③ The FTP use history can be viewed.

Apr 30 10:12:37	LG-NAS proftpd[10820]: localhost (192.168.0.7[192.168.0.7]) - FTP session closed.
Apr 30 10:12:37	LG-NAS proftpd[10820]: localhost (192.168.0.7[192.168.0.7]) - USER admin: Login successful.
Apr 30 10:12:36	LG-NAS proftpd[10820]: localhost (192.168.0.7[192.168.0.7]) - Preparing to chroot to directory '/mnt/disk'
Apr 30 10:12:36	LG-NAS proftpd[10820]: localhost (192.168.0.7[192.168.0.7]) - FTP session opened.
Apr 30 10:12:26	LG-NAS proftpd[10820]: localhost (192.168.0.7[192.168.0.7]) - mod_tls/2.2.1: notice: unable to open TLSLog: No such file or directory
Apr 30 10:12:26	LG-NAS proftpd[10820]: localhost (192.168.0.7[192.168.0.7]) - inappropriate log file: TLSLog
Apr 30 10:05:55	LG-NAS proftpd[9832]: localhost (192.168.0.7[192.168.0.7]) - USER admin: Login successful

- ④ The diagnosis is und and the result can be viewed
 - The service code for proper functions is displayed as [SVC_CODE: 00_00].

SVC_CODE	Service Code	SVC_CODE[00_00]
MAC	Address	00 50 43 FC 36 2F
Version	Main IC	RD-88F6192A-NAS
Version	System	0.9.7_1607
Version	Uboot	3.4.15
Version	Micom	090622ES
Version	Kernel	Linux LG-NAS 2.6.22.18 #14 Fri Jul 24 11/24/04 KST 2009 armv6tejl unknown REV.34

- ⑤ Selected tab log can be downloaded to the client PC.

Top menu

WebDAV

LG Network Storage supports the WebDAV function which allows to remotely drag and drop, open and save functions after logging on to LG Network Storage from the web. ("MS Office file" only)

* The WebDAV function will allow the user logged in through the webpage to access files in the LG Network Storage as if they were files in the user's PC.

The PC must have Microsoft's MS Office installed in order for the WebDAV to be available.

<Install>

To use WebDAV, user folder must be generated and WebDAV must be selected from the support protocol.

Create New Folder

Shared Folder Name	<input type="text" value="webdav"/>
Folder Description	<input type="text" value="webdav"/>
Volume	<input type="text" value="volume1"/>
Protocol Support	<input checked="" type="checkbox"/> Windows <input type="checkbox"/> AFP (Mac) <input type="checkbox"/> FTP <input checked="" style="border: 2px solid red;" type="checkbox"/> Webdav
Folder Attribute	<input checked="" type="radio"/> Normal <input type="radio"/> Hidden (CIFS/SMB Only)
Recycle Bin	<input checked="" type="radio"/> Enable <input type="radio"/> Disable
Folder Access Restriction	<input checked="" type="radio"/> Enable <input type="radio"/> Disable

▼ Local User
▶ Local Group

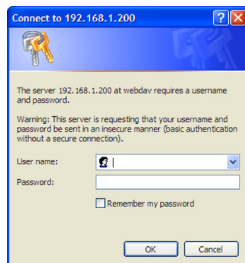
User Name	Read /Write	Read Only
admin	<input checked="" type="checkbox"/>	<input type="checkbox"/>
junhyung	<input type="checkbox"/>	<input type="checkbox"/>

<Open>

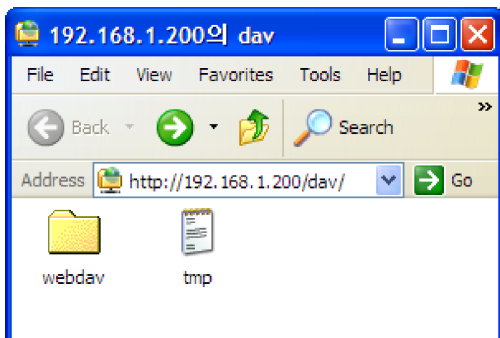
- ① Select the WebDAV icon on the top.



- ② Go through user certification. This is the same as the user certification required for network folder access.



- ③ Once certified, the following screen will pop up and file drag and drop, open, edit and save functions will be made possible.



* This information is for Windows XP users only. Other OS users should refer to the information found online.

My Information

- ① Click the "My information" button on the left top corner. This displays the user information.
- ② Click on the "Edit" button on the right bottom corner.

Edit My Information

User Name	<input type="text" value="System Admin"/>
User ID	<input type="text" value="admin"/>
User Password *	<input type="password"/>
New Password	<input type="password"/>
Confirm New Password	<input type="password"/>
User E-mail	<input type="text"/>
User Description	<input type="text" value="Default System Administrator"/>

- ③ Enter the modified information, enter the existing password in "User password" and click on "OK".

* To change the password, enter the existing password in "User password" and enter the new password in "New password" and "Confirm new password".

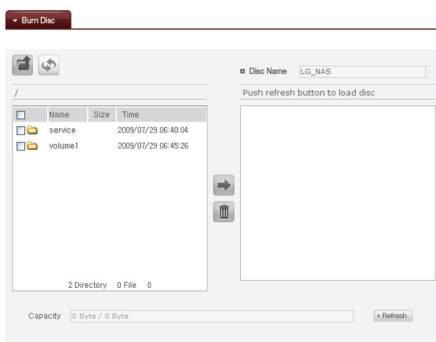
5. LG Network Storage web menu usage (Regular users)

Blu-ray / DVD

The built-in Blu-ray/DVD drive allows direct copy of data from discs to LG Network Storage. Furthermore, secondary backup of data using the Blu-ray drive makes data management safer and more efficient.

Burning

Burning the LG Network Storage data to disc is possible using the Blu-ray/DVD drive.



Burn Disc

Burning LG Network Storage files to disc is possible.

[Button functions]



: Moves to upper folder.



: Refreshes the current folder.

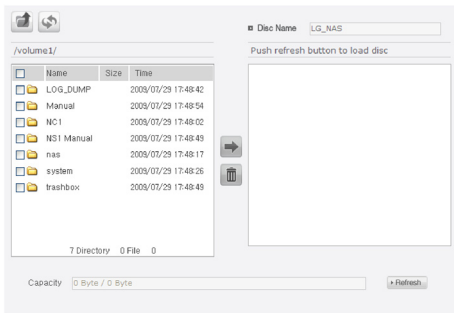


: Files or folders selected on the left window are sent to the right window to organize a list for recording.

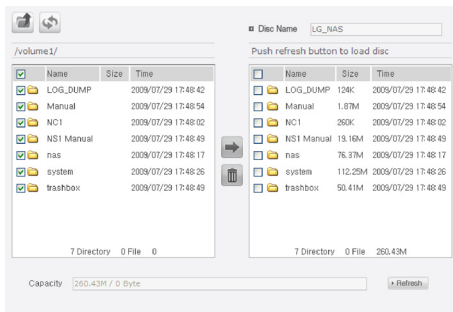


: Deletes selected files or folders from the list organized for recording on the right window.

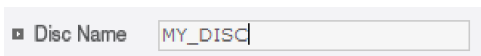
- ① Move the intended folder or file to the destined location.




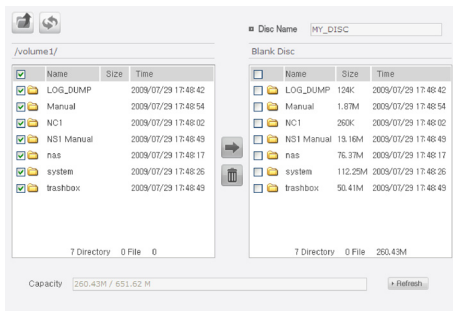
- ② Selecting a folder or file to record and move to the right side produces a configuration data list.




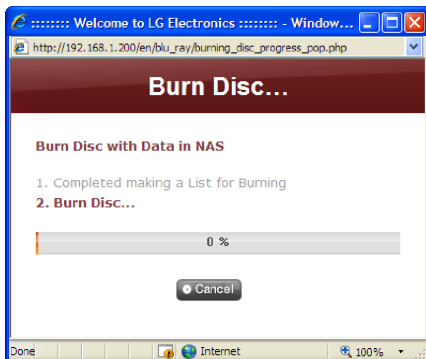
- ③ Specify disc name in the "Disc Name" window



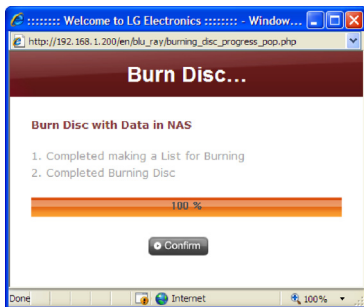
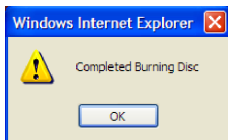
- ④ Click on the  button and confirm that disc writing is possible as indicated in the disc status box.



- ⑤ Pressing the  button begins the burning process. The burning process is accompanied by a progress bar display. To cancel the process, click on the 'Cancel' button, which appears with the progress bar.



- ⑥ At the end of the burning process, the tray ejects and the disc can be removed.



Top menu

My Information

- ① Click the “My information” button on the left top corner. This displays the user information.
- ② Click on the “Edit” button on the right bottom corner.

Edit My Information

User Name	<input type="text" value="System Admin"/>
User ID	<input type="text" value="admin"/>
User Password *	<input type="password"/>
New Password	<input type="password"/>
Confirm New Password	<input type="password"/>
User E-mail	<input type="text"/>
User Description	<input type="text" value="Default System Administrator"/>

[Back](#)[Apply](#)

- ③ Enter the modified information, enter the existing password in “User password” and click on “OK”.

* To change the password, enter the existing password in “User password” and enter the new password in “New password” and “Confirm new password”.

6. LG Network Storage via network drive

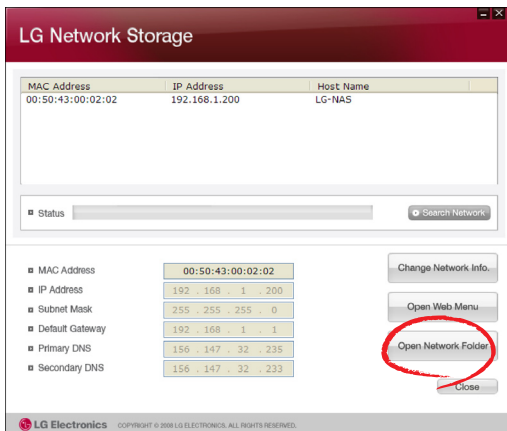
The file sharing service is the most important function in LG Network Storage. This section pertains to Windows, Mac, Linux OS, which are explained in reference to their use with the LG Network Storage network drive.

Accessing the LG Network Storage data in Windows OS

For Windows users, observe the following procedure to access the LG Network Storage.

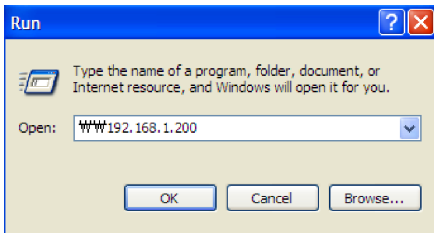
PC Application Program Usage

After setting up the 'LG Network Storage PC Software Installer' disc NAS Detector program and desktop icon use, execute and clicking on the "Open Network Folder" button will allow access to LG Network Storage's sharing folder. For detailed setting information refer to [<PC Application Usage>](#).



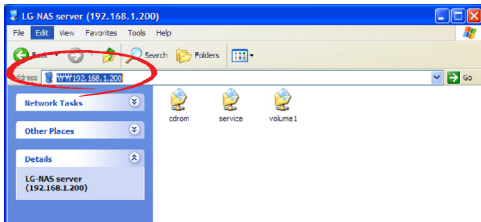
Windows OS “Execute” function use

Clicking on “Execute” in the Windows OS can start a new menu with inputting the \\IP Address to the LG Network Storage can be accessed. If IP address is unknown, refer to <Use Application Program> or <LG Network Storage Information Confirmation>.



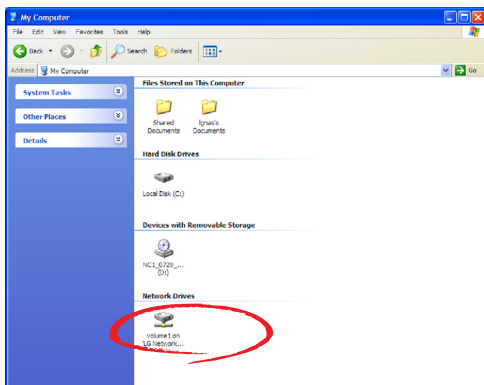
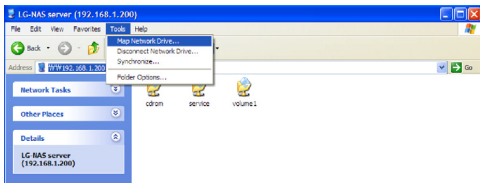
Windows File Sharing Use

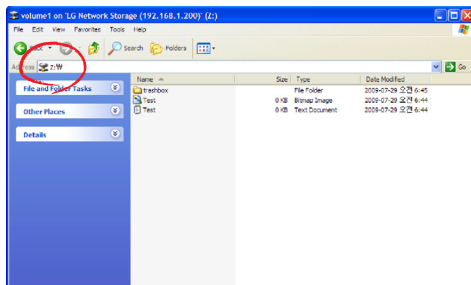
Open the web browser and input '\\IP address' in the address bar. The server can be accessed after the log in. If the IP address is unknown, refer to <Use Application Program> or <LG Network Storage Information Confirmation>.



Tip) Post server connection, network drive set-up

If there is a connection to the LG Network Storage, all sharing folders are registered. If settings involve the network drive using the “Tools > Map Network Drive...”, future connection to the LG Network Storage server becomes more convenient.





* Multiple folders can be set up in different network drives in the same way.

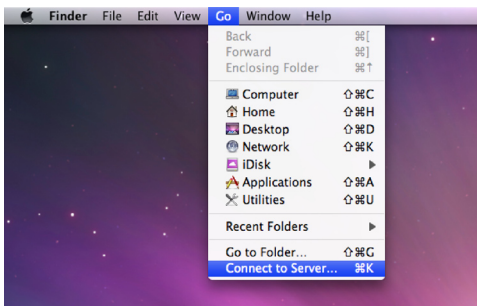
MAC OS connection

MAC users can connect to the LG Network Storage by methods such as explained below.

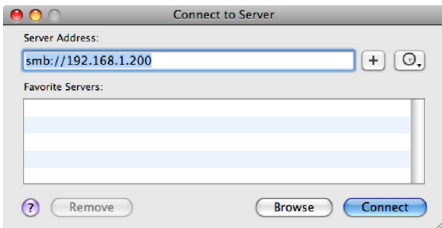
["Server connect" function use]

The LG Network Storage sharing folder can be added to the Mac server list on the desktop. The connection order is as follows.

- ① Select "Connect to server" after clicking on "Go" at menu bar.



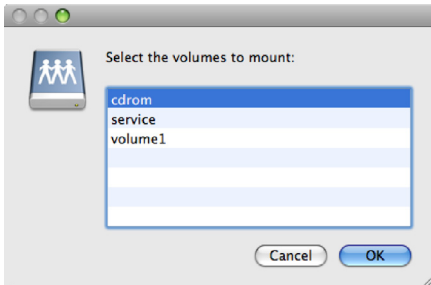
- ② At the server address field, input the LG Network Storage IP address 『smb://LG Network Storage IP Address』, and click the "Connect" button. If the LG Network Storage IP address is not known, refer to [<Use Application Program>](#) or [<LG Network Storage Information Confirmation>](#).



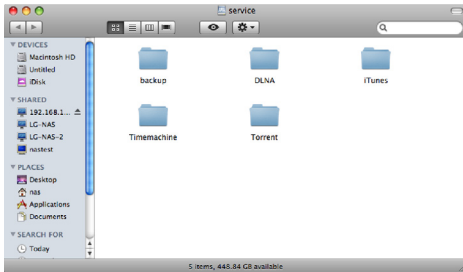
- ③ Input the log in ID and password and click on the 'OK' button. The initial settings are as follows: ID: admin, password: admin. For future security, it is recommended that password is changed after logging on to the web administrator page.



- ④ Select the volume to be used (e.g. cdrom/service/volume1) in the LG Network Storage folder list and click “OK”.



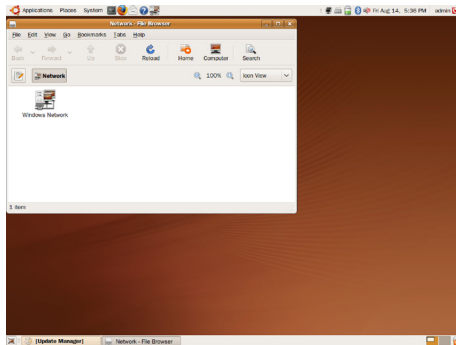
- ⑤ The relevant shared folder will open and the contents displayed.



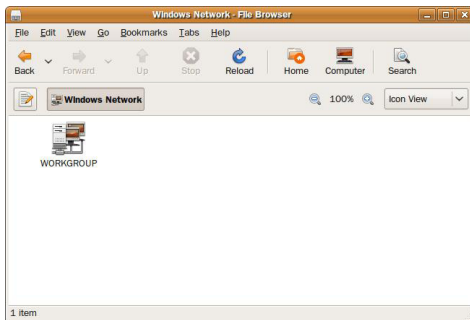
Linux OS access

LG Network Storage supports Windows, MAC, and Linux OS, through the SMB service. The Linux system connection is as follows. Ubuntu will be used as a reference.

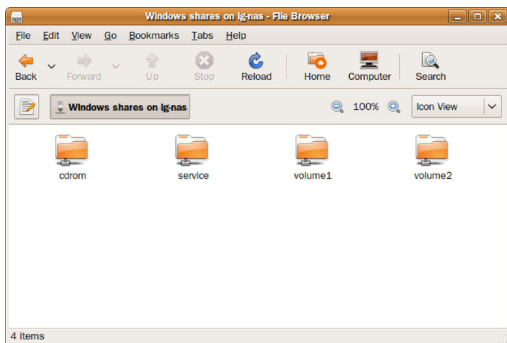
- ① Click on the menu bar and then select 'network'.



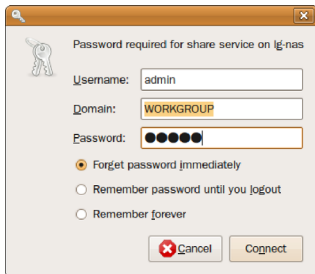
- ② Click on "Windows Network" and select "workgroup" to display the LG Network Storage connected. Select the name of the LG Network Storage to connect to.



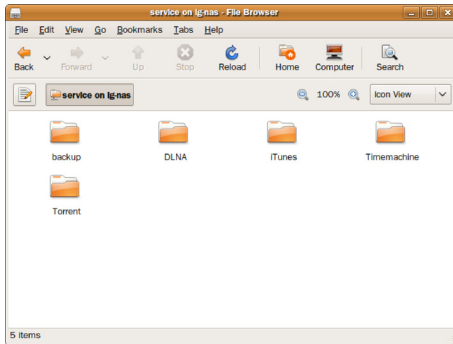
- ③ Selecting LG Network Storage will display the folder list of LG Network Storage. Select the volume to be used (e.g. cdrom/service/volume1).



- ④ If the ID and passwords are inputted then connection to the LG Network Storage is allowed. Initial default information is ID: admin, password: admin. For future security, it is recommended that password is changed after logging on to the web administrator page.



- ⑤ After logging in, the LG Network Storage share folder appears.



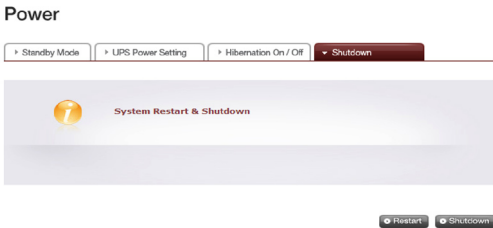
7. LG Network Storage Maintenance

This section explains about general LG Network Storage maintenance and self-diagnosis.

LG Network Storage shut down/restart

The following steps pertain to server shut down/restart.

- ① Inform all connected users to save files in operation and stop use of the LG Network Storage.
- ② Open the administrator web page, and go to the 'System > Power > Shutdown' tab. Follow the description and press the 'Restart' button to restart or the 'Shut down' button to shut down.



For a compulsory shut down of LG Network Storage, press the power button for more than 3 seconds. A message saying that system will shut down will pop up and LG Network Storage will shut down.

Administrator password and network set up initialization

Open the administration web menu and go to the 'Initialization' tab of the 'System > Firmware' menu. Following the explanation, push the 'Initialization' button and initialize the default system values.

Warning: As this time all registered user information and data will be deleted, and cannot be recovered.

- **LG Network Storage default value initialized items**
 - ① System administrator ID, password: admin, admin
 - ② Network set up /TCP/IP configuration: DHCP mode will be set up as default mode
 - ③ Network set up/TCP/IP configuration : Jumbo frame inactivity
 - ④ System device/IP filter: All connections are allowed
 - ⑤ RAID components
 - ⑥ Service set-up value
 - ⑦ User/folder/group list
- **Log in to the LG Network Storage using the default user name and password:
ID: admin, password: admin**

Firmware



System information checking and saving

Open the administration web menu and go to the 'Log' of the 'Information' menu then check and save settings in 'System Log', 'Samba Log' and 'FTP Log'.

Log

Date & Time	Log Information
Jul 25 17:02:18	LG-NAS @_setup: [*_SETUP] Received command : r
Jul 25 17:09:18	LG-NAS @networkclient[672]: admin[192.168.1.100]: volume1
Jul 25 18:59:49	LG-NAS @networkclient[672]: admin[192.168.1.100]: volume1/Test.txt
Jul 25 18:59:15	LG-NAS @networkclient[672]: admin[192.168.1.100]: volume1
Jul 25 19:59:20	LG-NAS @networkclient[672]: admin[192.168.1.100]:
Jul 25 19:59:14	LG-NAS @mail-client[1500]: Service 'LG-NAS-2' (/etc/samba/services/ftp.service) successfully established.
Jul 25 19:59:14	LG-NAS @mail-client[1500]: Service 'LG-NAS-2' (/etc/samba/services/samba.service) successfully established.

Self-diagnosis execution

The LG Network Storage, by virtue of built in self-diagnosis mode, helps users easily recognize and handle problems arising on the server.

* The volume must first be constructed before running self-diagnosis.

- Open the administrator's web menu and go to "Information → Log" menu and select "Self-diagnosis" tab to immediately execute the LG Network Storage self-diagnosis.

Log

Diag Item	Sub Item	Test result
SVC_CODE	Service Code	SVC_CODE[00_00]
MAC	Address	00 50 42 00 02 02
Version	Main IC	RD-00FE102A-NAS
Version	System	0.9.0.1661
Version	Uboot	3.4.15
Version	Uprock	050721E9
Version	Kernel	Linux LG-NAS 2.6.22-18487 Mon Jul 27 25:55/41 KST 2009 armv5tel unknown REV.35

- Even in the middle of usage, the administrator can open up the administrator web menu and select the 'Self-diagnosis' tab in the 'Information > Log' menu, so the LG Network Storage immediately runs self-diagnosis.

System failure or malfunction

If the LG Network Storage does not display SVC_CODE[00_00] which verifies normal status and seems to have encountered a problem after running a 'Self-diagnosis' on the administrator web as stated above in section 7.4, follow the steps below.

- ① For technician's reference, write down the error code appearing on the LCD '[SVC_CODE xx_yy]' and make a record on tasks done before the accident and messages you witnessed.
- ② For error messages mentioned in ①, you can get help from LG electronics Service Site if such errors were caused by negligence. <http://www.lge.com>.
- ③ When no solution exists, do not disassemble and call the service center for remote technical support.

Power cut or failure

When power failure occurs, the LG Network Storage will return to its former pre power-failure state after reboot. In case of system malfunctions under normal environment, observe the following procedure.

- ① If the system settings are modified, the user must perform a new set up after reboot.
- ② If the system is still acting strangely contact the service centre.

To prevent data loss, frequently back up files.

- ① Follow the above description for shutdown/restart.
- ② In the case that a potential shut down is expected, all files must be saved and backed up. After the power is restored, reboot the system.

System temperature protection

If HDD temperature within the system exceeds 67 degrees Centigrade or 153 degrees Fahrenheit, the system ends automatically and to protect hardware.

8. RAID trouble shooting

The LG Network Storage RAID configuration is abnormal when error messages appear, hence resort to another solution:

Note: To avoid data obstacles, first perform a back-up of all important data from the LG Network Storage.

1. RAID configuration error checkup

- **Confirm whether there is an error on the RAID configuration:**

- ① On the Status Information/Volume page, the volume configuration state will show as "degraded/destroyed".

The screenshot shows the 'Status' page of the LG Network Storage interface. The 'Status' tab is selected, and the 'RAID' column in the table below is circled in red, showing the value 'Degraded'.

No	Name	RAID	Status	Capacity
1	volume1	2D06	Degraded	1% 1894/2305

- **Confirm which HDD is causing the RAID error.**

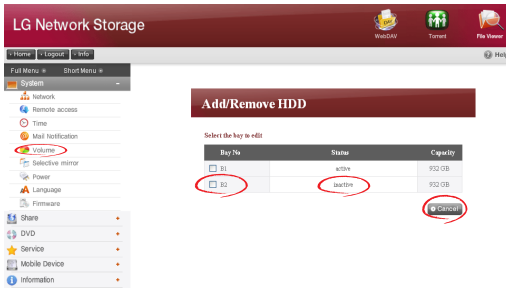
- ① LED: The LG Network Storage state LED will appear as red.
- ② Hard disk with error will not appear in the hard disk status window.

The screenshot shows the 'Hard Disk' status page of the LG Network Storage interface. The 'Hard Disk' tab is selected, and the table below shows the status of the hard disk. The 'Status' column is circled in red, showing the value 'error'.

Bay No	Vendor	Model Number	Status	Capacity
01	Seagate	ST7200LXAS0	error	832 GB

2. Problem solutions

Removing the HDD with the error and connecting a new hard drive (e.g. HDD 2) will display the new hard disk status to be inactive on the system/volume/add or remove HDD page. Select the hard disk and click the Add button and RAID will reconfigure. This will delete all contents of the new hard disk. RAID reconstruction entails to RAID 1 only.



If there is another failure during reconfiguration, another hard disk should be connected in place of the hard disk at work and reconfigure RAID.



When connecting or disconnecting the HDD, strictly adhere to the following procedure and avoids abnormal system operation or data obstruction.

1. In the LG Network Storage, one HDD can be connected or disconnected at a time.
2. 10 seconds will lapse before 2 tones are heard when the LG Network Storage is connected to or disconnected from a new hard drive. Next, connect or disconnect the HDD.

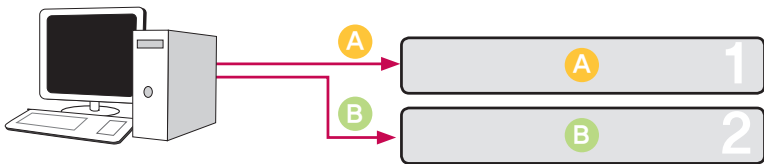
Appendix A Volume Construction & RAID Configuration

This section describes volume configuration and supported RAID level. When configuring volume using RAID, the use of Disks of the same manufacturer and capacity is recommended to maximize stability and efficiency of configuration. In the case that the Disks differ in capacity and trademark, data may be lost due to low system stability and efficiency. In the case that the volume of the damaged Disk must be amended, relevant data must first be backed up.

- **Single Disk (None) volumes**

The volume can be configured to each Disk without configuring the RAID. This is similar to methods with general PCs that use Disks.

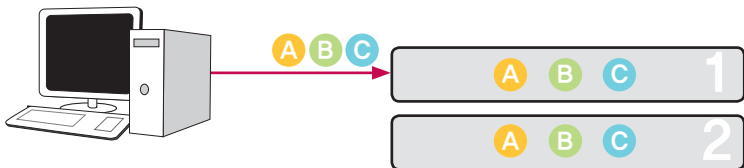
If the Disk is damaged, the damaged Disk data may be lost.



- **Mirroring volumes**

Data can be exactly replicated to the Disk through this technique. If one Disk becomes damaged in the volume, data can be efficiently transferred, saved and backed up to another configured Disk. The volume's storage capacity is equal to that of the smallest Disk in the RAID1, as the data is reproduced from Disk to Disk. The data backup is a priority during RAID1.

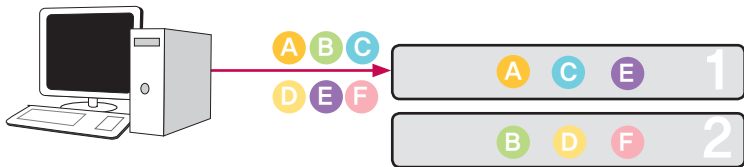
The saving of important data is recommended.



- **RAID0 striping volume**

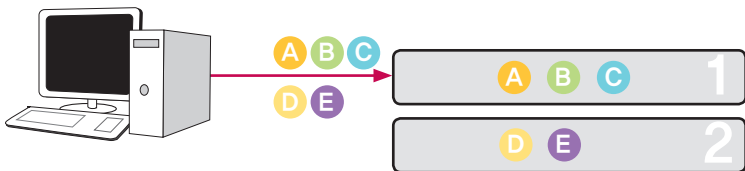
The Disks are configured in parallel so that they are all being used at once to store data, as if they were one Disk in summation. Because the data is saved to each Disk in parallel, many files of low capacity are read simultaneously but with superior efficiency. Many low capacity files are read because multiple blocks of data are stored to each Disk, though the performance is excellent at this time. In order to secure data stored, Information is not read when at least one Disk is damaged. Subsequently, if the Disk is damaged, the saved data in the volume will be lost. The storage capacity of the volume as a whole is the sum of the capacities of all of the Disks.

This technique must not be used for the saving of important data, but rather for fast data access and for maintenance of the security of its volume capacity.



- **JBOD Linear volume**

The Disks are configured in series so that they are all being used at once to store data, as if they were one Disk in summation. The volume's storage capacity can be maximized, as the data is stored to the Disks in sequence. Data must not be written in the event of a damaged Disk to safeguard saving capacity. In this way, if a Disk is damaged, saved date in the volume will be lost. The storage capacity of the volume as a whole is the sum of the capacities of all of the Disks. To maximize the safeguard of capacity of the volume, saving of important data is not recommended.



Appendix B Technical Support

LG Network Storage provides dedicated online support and customer service via instant messenger.

You can contact us by the following means:

-. Online Support : <http://www.lgservice.com>

LG Electronics U.S.A. Inc, 1000 Sylvan Ave.

Englewood Cliffs NJ 07632 U.S.A or <http://www.lgusa.com>

LG Electronics Deutschland GMBH Jakob-Kaiser-Strae 12,
D-47877 Willich, Germany

Goldstar France E.U.R.L Paris Nord II 22, Avenue des Nations-B.P.50372
VILLEPINTE 95945 ROISSY CDG CEDEX France

LG Electronics España Complejo Europa Empressaries (Edif. Bruselas)
Ctra, N-VI 28230 Las Rozas Madrid Spain

Appendix C Open source software notice

The following GPL executables and LGPL libraries used in this product are subject to the GPL/LGPL License Agreements:

GPLv2.0 :

- apcupsd
- apt
- base-files
- base-passwd
- bash
- bootchart
- busybox
- bzip2
- ca-certificates
- cdrtools
- dbus
- debian-archive-keyring
- debianutils
- dpkg
- dvd+rw-tools
- e2fsprogs
- file-rc
- gcc
- gpm
- grep
- hostname
- ifplugd
- ifupdown
- inadyn
- inotify-tools
- jQuery
- krb5
- libcap
- libgdbm
- libid3tag
- Linux Kernel

- lockfile-progs
- logrotate
- lprng
- lsb
- lzo
- module-init-tools
- mtd
- mt-daapd
- netatalk
- netbase
- net-tools
- noflushd
- ntfs-3g
- pam
- perl
- proftpd
- psmisc
- readline
- scst-iscsi
- sed
- sg3-utils
- shadow
- smbwebclient
- ssmtp
- sysklogd
- time
- transmission
- u-boot
- udev
- util-linux

GPLv3.0 :

- binutils
- gnupg
- parted
- rsync
- samba
- wget

LGPLv2.1 :

- acl
- Ajaxplorer
- attr
- avahi
- codepress
- confuse
- debmapper
- dialog
- glib2.0
- glibc
- gmp
- gnutls8
- keyutils
- libdaemon
- libexif
- libgcrypt
- libgpg-error
- libiconv
- libidn
- liblockfile
- libscew
- libtasn1
- libusb
- lzma
- mpfr
- packer
- ufo

LG Electronics offers to provide source code to you on CD-ROM for a charge covering the cost of performing such distribution, such as the cost of media, shipping and handling upon e-mail request to LG Electronics at:

opensource@lge.com

This offer is valid for a period of three (3) years from the date of the distribution of this product by LG Electronics.

You can obtain a copy of the GPLv2.0, GPLv3.0, LGPLv2.1 licenses from

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<http://www.gnu.org/licenses/gpl-3.0.html>

<http://www.gnu.org/licenses/old-licenses/lgpl-2.1.html>.

Also you can obtain the translation of GPLv2.0, GPLv3.0, LGPLv2.1 licenses from

<http://www.gnu.org/licenses/old-licenses/gpl-2.0-translations.html>, <http://www.gnu.org/licenses/translations.html>,

<http://www.gnu.org/licenses/old-licenses/lgpl-2.1-translations.html>.

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This product includes software developed at The Apache Software Foundation (<http://www.apache.org/>).

Portions of this software were developed at the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign.

This software contains code derived from the RSA Data Security Inc. MD5 Message-Digest Algorithm, including various modifications by Spyglass Inc., Carnegie Mellon University, and Bell Communications Research, Inc (Bellcore)

This work includes the Expat xml parsing library Copyright (c) 1998, 1999 James Clark, distributed under and subject to the Mozilla Public License Version 1.1.

This work includes the regex library Copyright 1992, 1993, 1994 Henry Spencer, all rights reserved.

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- bind9 :
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Copyright © 1996–2001 Nominum, Inc.
- cyrus-sasl2: Copyright © 1998–2003 Carnegie Mellon University
- debconf: Copyright © 1999–2006 Joey Hess <joeyh@debian.org>.
- dhcp3: Copyright © Internet Systems Consortium (ISC) <dhcp-users@isc.org>
- dibi : Copyright © 2005, 2008 David Grudl (<http://davidgrudl.com>)
- file:
Copyright © 1985–1995 Ian F. Darwin
Copyright © 1994–2008 Christos Zoulas christos@zoulas.com
Javascript MD5 : Copyright © 1998 – 2009, Paul Johnston & Contributors
- Libcurl: Copyright (c) 1996 – 2008, Daniel Stenberg, daniel@haxx.se
- Libpcap: Copyright © 1993–2008 The Regents of the University of California.
- Libssh :
Copyright (c) 2004–2007 Sara Golemon <sarag@libssh2.org>
Copyright (C) 2006–2007 The Written Word, Inc.
- Libxml:
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Copyright © 1998–200 Bjorn Reese and Daniel Stenberg.
Copyright © 2000 Gary Pennington and Daniel Veillard.
- Lighttpd: copyright © 2004, Jan Kneschke, incremental
- Ncurses: Copyright © 1998 Free Software Foundation, Inc.
- ntp: Copyright © David L. Mills 1992–2006
- pcre:
Copyright © 1997–2007 University of Cambridge
Copyright © 2007, Google Inc.
- PHP5 software, freely available from <http://www.php.net/software/>.
Copyright © 1999 – 2009 The PHP Group.
- popt: Copyright © 1998 Red Hat Software
- portmap:
Copyright © 1983,1991 The Regents of the University of California
Copyright © Sun Microsystem.

- Prototype JavaScript framework: Copyright © 2005–2008 Sam Stephenson
- Scriptaculous : Copyright © 2005–2008 Thomas Fuchs (<http://script.aculo.us>, <http://mir.aculo.us>)
- sudo:
Copyright © 1994–1996,1998–2005,2007 Todd C. Miller <Todd.Miller@courtesan.com>
Copyright © 1987, 1989, 1990, 1991, 1993, 1994 The Regents of the University of California
- tcp-wrappers: Copyright © 1995 by Wietse Venema
- Expat: copyright © 2006 expat maintainers.
- OpenSSL: software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<http://www.openssl.org/>)
- cryptographic software written by Eric Young (eay@cryptsoft.com).
- software written by Tim Hudson (tjh@cryptsoft.com).
- software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (http://www.openssl.org)
- Zlib: Copyright © 1995–2002 Jean-loup Gailly and Mark Adler.

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Appendix D Compatible/Recommended Device List

For the latest compatible/recommended device list, please visit <http://www.lge.com>.

Recommendation hard disk list

The following is a list of hard disks possibly compatible with the LG Network Storage.

The following hard disks are recommended. In the case of using hard disks not recommended by LG Electronics, malfunctions in the LG Network Storage can occur.

For updated hard disk recommendations, go to the link <http://www.lge.com>.

